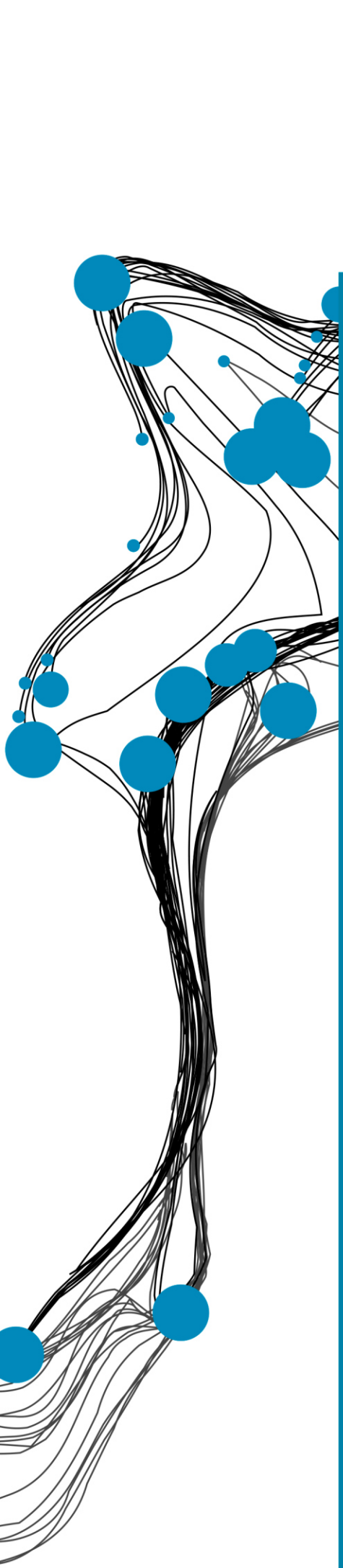

Can a crowd generate creativity?

The social influence of the crowdsourcing community on task satisfaction, attitude towards the initiating organization and creative outcomes of idea generating co-creation activities

Master Thesis

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Abstract

Co-creation activities for idea generation result in several advantages for both consumers and organizations. A successful participation of consumers is needed to guarantee a high quality of results in those endeavors. This study proposes to analyze the influence of the co-creation community towards task satisfaction, attitude towards the company and creative outcome of submitted user ideas. There exists a paradox: the amount of information about the co-creation community can on the one hand support co-creation participation and output but inhibit it as well. Based on the theories of social comparison, design fixation, information overload and evaluation apprehension it is hypothesized that the number of other users' ideas and the availability of community evaluation via ratings can influence task satisfaction, attitude towards the company and creative outcome. Furthermore task motivation is proposed as a moderator and the creative thinking capabilities of the participant as a covariate in this relation. A 3x2 factorial experimental design has been suggested in order to measure these effects. A co-creation platform of a mock-up café brand was used as a stimulus in an online survey with 228 participants that generated a total of 205 ideas. Those ideas were rated in a subsequent content analysis according to their quality. Results showed that information about the community based on the number of other users' ideas and the existence of a rating scheme does influence idea novelty and thereby the total idea quality. Furthermore it was found, that providing only single ideas leads to a decreased idea novelty based on design fixation. Task motivation and creative thinking are main drivers for idea quality and task satisfaction. Furthermore task satisfaction can be seen as a key success criterion since it is related to a positive attitude and perceived innovativeness of the initiating organization. Adding information about how the community of a co-creation platform performs can increase, but also paradoxically inhibit creative output. Therefore design aspects of the platform should be incorporated in future crowdsourcing research and also be considered by organizations that want to pursue co-creation activities.

Keywords: co-creation, crowdsourcing, social influence, idea generation, creativity

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1 Introduction of the research topic

Many times customers have the impression that they have way more creative and interesting ideas, on how to improve a product than the producer itself. 'They should design their package to be reclosable!' Or: 'Why don't they add marshmallow flavor to their chocolate?' It often seems consumers know much more about the product than all product managers or marketers behind the product. Those lead users are on a par with the current market trends and want to push innovation forward, because they benefit from novelties in the field (Hiernerth & Lettl, 2016). They can provide original and valuable ideas and solutions, that surpass the ones of employees, because their way of thinking is not bound to an organization and certain processes (Schweisfurth, 2017).

Due to the rise of social media and Web 2.0, the relationship between companies and consumers has shifted towards a customer-focused approach. This relationship is based on cooperation and a greater influence of the consumer (Constantinides, 2014). With co-creation, consumers are able to take part in the production at all stages of the value-creation process due to dynamic interaction and involvement (Constantinides, Brünink & Lorenzo-Romero, 2015; Vargo & Lusch, 2004). Organizations like Starbucks, Lego or Frito-Lay have already made use of customer-driven innovation. In the Lego Ideas (Lego, 2016) platform consumers can share their ideas for new Lego sets to the community and pitch them there. The best rated ideas are reviewed by the Lego staff and if they are feasible, they will be introduced as a new Lego product. Frito-Lay (Pepsico, 2012) let their customers create new flavors for the chips brand. In the Netherlands a jury decided which flavor was best, which then was mass produced. The creator was awarded with 25.000 EUR and 1% share of the profit. Therefore companies can benefit from the ideas of their consumers by getting insights in the consumers' interests and by reducing research and development costs.

According to Estelles-Arolas and Gonzalez-Ladron-de-Guevara (2012) co-creation can be seen as a specific kind of crowdsourcing, whereas they define crowdsourcing as a

> type of participative online activity in which an individual, an institution, a non-profit organization or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. (p. 197)

Such technological advantages like crowdsourcing or co-creation can be of paradoxical nature (Mick & Fournier, 1998). A paradox is defined as something that is both a certain state, but also the opposite state at the same time (Mick & Fournier, 1998). Technological innovations can thus generate contrasting conditions that exist simultaneously. This means that technology creates

positive as well as contradictory negative outcomes for the user. For example, online communication tools at the workplace can on the one hand support work engagement of employees and their well-being, while also increasing the danger of burnout (Ter Hoeven, van Zoonen & Fonner, 2016).

A paradox is characterized by a constant shift between the positive and negative state (Mick & Fournier, 1998). Which of those two opposing conditions have a greater effect is strongly depending on environmental factors (Mick & Fournier, 1998). Ter Hoeven et al. (2016) for example suggest environmental adaptions such as in the communication structure and organizational culture. This should harness the positive sides and reduce the negative sides of the technological paradox regarding online communication tools. These environmental factors can be emphasized or mitigated by design choices, which can help controlling the paradoxical nature of technologies. This study wants to demonstrate in what way a crowdsourcing community has paradoxical effects on the user and how the design of a crowdsourcing platform can have influence on positively controlling these.

2 Theoretical framework and research questions

The term crowdsourcing was first used by Howe (2008) as a combination of the terms crowd and outsourcing, signifying that a certain task is outsourced to a group of not further defined people. Crowdsourcing can be useful in generating new ideas by producing external input directly from the customer side (Schemmann, Herrmann, Chappin & Heimeriks, 2016). In the case of idea co-creation one can speak of product innovation that is initiated by the consumer. A product innovation can either be the development of a new product, a design change of an existing product or the use of new materials in production (White, Braczyk, Ghobadian & Niebuhr, 1988). Such innovative proposals have to be original, useful, realistic and described in a comprehensive way to be regarded as a creative solution (Dean, Hender, Rodgers & Santanen, 2006). In a co-creation procedure both company and consumers benefit from each other: businesses can directly research needs of the consumers, obtain a vast array of different innovative, costumer-benefit-based ideas (Poetz & Schreier, 2012) and even increase the participating users' purchase intention (Hsieh & Chang, 2016). Customers receive benefits by learning, by socially bonding with other users, by enhancing their own status and confidence and by experiencing the task as a stimulating one (Constantinides et al., 2015).

2.1 The paradox of user participation in idea generating co-creation tasks

Creative outcomes are not purely based on individual attributes of the creative person like motivation, experience and ability. They are likewise impacted by the social environment (Paulus & Dzindolet, 2008). The idea of an active social community is an important factor for co-creation, since initiators favor ideas when they are evaluated by users that participate in the crowdsourcing task (Schemmann et al., 2016). Companies also prefer suggestions that are regarded as the best by the crowd (Schemmann et al., 2016). Therefore a certain user base is needed for the initiator in order to generate different ideas that can be evaluated. On the other hand, a broad user base can also have negative effects on user engagement: It was found, that when a community surpasses a certain number of active users, idea generation is negatively affected (Chan, Li & Zhu, 2015). Indeed users are getting inspired by the vast amount of ideas by other users. But the high amount of communication and information they obtain can also distract them in their creative output. Chan, Yim and Lam (2010) also indicated this by calling customer participation a double-edged sword: it fosters stronger relationships between customers and organizations but also increases stress and uncertainty for the consumer. A community can thus act as a distraction as well as a stimulation for the user (Paulus & Dzindolet, 2008) and influence the motivation to take part in the creative process (Paulus & Brown, 2007). At the moment a user visits the platform, these social factors can be critical in deciding how the user experience is perceived and how creative the user's idea will be.

This means a crowdsourcing community fosters creative outputs due to inspiration and evaluation. At the same time it also impairs it by increasing stress through a higher amount of needed communication and more points of debate. This effect can be attributed to the engaging/disengaging paradox by Mick and Fournier (1998). This kind of paradox is characterized by the circumstance that a certain technology (here the possibility of co-creating in a community via Web 2.0) can support flow, activity or involvement and at the same time induce passivity, disruption or disconnection. Creating ideas on a crowdsourcing platform within a community can indeed be very involving and be enjoyed by the user, but as well seen as an extensive and dissatisfying task and cause frustration depending on the co-creation experience (Gebauer, Füller & Prezzei, 2013; Zheng & Fan, 2011). The challenge is to create a digital environment for the user that reinforces the engaging part of the paradox. In crowdsourcing the community basically serves two main functions: to build, share and show different outcomes and to evaluate the ideas of others (Doan, Ramakrishnan & Halevy, 2011). The design of these two components of the crowdsourcing platform can help influencing the paradoxical effect the crowdsourcing community has on the user. In order to analyze the paradox the following research question is stated:

How do the number of ideas from other users and the existence of a public evaluation by the community through a rating system influence the user's task satisfaction, the user's attitude towards the initiating organization and its perceived innovativeness, as well as the creative quality of the idea?

2.2 Amount of ideas from other users

According to the theory of social comparison (Festinger, 1954) individuals have the need to evaluate and compare themselves and their outputs with others in their social context. If users in idea generation tasks can see the ideas of other users, they can be inspired by them or motivated to try harder (Bandura & Jourden, 1991; Paulus & Dzindolet, 2008). Therefore social comparisons help the co-creation participants to evaluate their own ideas before the submission. It has already been shown that creative people create qualitatively better results in creative idea generation when an upward comparison (comparison with people that are considered as more creative) is present (Michinov, Jamet, Métayer & Le Hénaff, 2015). A mutual exchange of ideas can also create the feeling of working together on a certain task (Constantinides et al., 2015; Hoyer, Chandy, Dorotic, Krafft & Singh, 2010; Nambisan & Baron, 2007). A high number of participating users can positively influence engagement of other users when showing their ideas to each other (Chan et al., 2015). Ideas of other users can support the retrieval of further ideas from the user's associative memory or even allow the combination of different ideas (Paulus & Dzindolet, 2008).

On the downside, ideas of other users can create examples that cause design fixation. Fixation can happen during the design process in the idea generation phase and is caused when a given example idea results in a restriction of the possible idea proposals (Jansson & Smith, 1991; Vasconcelos & Crilly, 2016). When reading an example idea, the user is bound to that idea and dismisses other possibilities to think about the problem in a wider sense, which inhibits creativity. This effect can be explained that activated information (either from memory or given as an example) blocks the retrieval of other related information (Smith, Ward & Schumacher, 1993). One important factor that reduces design fixation is the quantity of given examples (Perttula & Liikkanen, 2006). Using a great variety of examples from different topics can thus improve the creativity of the outcomes (Vasconcelos & Crilly, 2016). This is in concordance with the findings that more common examples may cause a greater degree of design fixation compared to novel examples (Perttula & Sipilä, 2007). Since co-creation platforms should at best represent a diverse and novel collection of ideas, many different ideas should improve the creativity outcomes. Thus solutions from the crowd are not averaging solutions but aggregate on each other (Surowiecki, 2005). Diverse task groups also show better performance and express higher satisfaction in a creative task than specialized groups, since they are able to bring up more divergent ideas (T. Stone, 1971).

On the contrary, a vast amount of presented ideas can also result in a decreased satisfaction and creative quality output. Giving users an overview of too many ideas can provoke distraction and the feeling of not being able to contribute any further good proposals. This circumstance can be defined as the inverted-U-shaped effect (Grant & Schwartz, 2011). At a certain point of added ideas as inspiration, their positive effect declines. Ideas of other participants can provide a choice for the user to process a problem further or combine several ideas together and therefore initiate creative performance (Chua & Iyengar, 2008). Choices can have positive effects, but a too high level of choice can turn this into the negative and lead to dissatisfaction and disengagement (Grant & Schwartz, 2011). This can be explained due to information overload (Scheibehenne, Greifeneder & Todd, 2010): presenting too many choices to the user results in an increased cognitive effort since every choice has to be processed. This eventually leads to a lower creative performance, because participants are overwhelmed (Chua & Iyengar, 2008) or even paralyzed (Paulus & Dzindolet, 2008). People simplify their thought processes by using heuristics when being confronted with too much information and even consider decision-making processes as more frustrating and difficult under that condition (Iyengar & Lepper, 2000).

That is why a curvilinear relationship between the number of shown ideas and creative outcome and task satisfaction is proposed. Giving a single idea example (one idea) should lead to a high level of design fixation and a low level of idea quality and task satisfaction. If a number of several different

examples is shown to the user (in this case six ideas), this should result in highly creative outcomes since fixation is averted and social comparison occurs. When increasing the number to many ideas (here with 21 ideas), information and choice overload occurs and satisfaction and creativity decrease. Therefore the following hypotheses are introduced:

H1a: If a single idea of another user is present, the task satisfaction will be lower than if several ideas of other users are present.

H1b: If a single idea of another user is present, the idea quality of the creative outcome will be lower than if several ideas of other users are present.

H2a: If many ideas of other users are present, the task satisfaction will be lower than if several ideas of other users are present.

H2b: If many ideas of other user are present, the idea quality of the creative outcome will be lower than if several ideas of other users are present.

2.3 Existence of a rating mechanism

The other aspect of the community is the mutual evaluation of ideas. By grading each other the ideas can be rated from best to worst. Many companies use this as a benchmark to filter out the best ideas (Schemmann et al., 2016). On many online platforms, users either provide a positive or a negative evaluation indication by providing a thumbs-up or a thumbs-down. This way each suggestion can be rated by the attention it evoked (the total number of votes), as well as by the number of users that are satisfied with the idea (ratio of positive to negative votes). This information is available to the user in a comprehensible way in form of a rating bar.

Certain visual indications of social comparisons in crowdsourcing platforms (e. g. ratings) can also have a negative impact on engagement. This is especially true when those features do not offer a clear reference point for the comparison (Heo & Toomey, 2016). Since idea generation has the aim to generate many different innovative and unique ideas for product creation, a clear reference point to compare ideas is not viable. Ideas can differ too much to create a fair way of comparing them, especially when only deciding between positive and negative. Therefore creating the impression that ideas are going to be openly evaluated by others could diminish engagement in the activity.

This point is supported by the idea of evaluation apprehension: when expressing ideas in groups, participants can feel inhibited in stating their own ideas, since they fear that their idea will be judged or criticized by other members of the team (Osborn, 1957; Paulus & Brown, 2007). Therefore evaluation apprehension can be a significant inhibitor in knowledge sharing processes (Van Acker, Vermeulen, Kreijns, Lutgerink & Van Buuren, 2014): People brainstorming in groups created a smaller

amount of ideas due to evaluation apprehension than when brainstorming individually (Paulus & Dzindolet, 1993). This is especially the case, when participants know that their individual performance and not the performance of the whole group will be rated (Camacho & Paulus, 1995), as it is done on crowdsourcing platforms. Knowledge sharing between two individuals creates lower levels of evaluation apprehension than knowledge sharing on a database (Bordia, Irmer & Abusah, 2006). This can be explained due to the greater number of individuals being able to criticize the suggestion and the long-lasting availability of the suggestion on the database (Bordia et al., 2006). Translated to a crowdsourcing community, this means that a publicly published idea induces a greater amount of evaluation apprehension than an idea that is only rated by the crowdsourcing initiator. Here the idea will not be criticized by a great number of people and the rating is not publicly available on the platform. By allowing the user to submit the idea without a public rating, the motivation to engage in the task could be increased and the quality of the creative output improved.

Aside from these social psychological mechanisms that decrease productivity and satisfaction of group work, Camacho and Paulus (1995) also name two additional mechanisms. A procedural prevention of productivity can arise, when too much feedback and communication happen inside the community due to evaluation processes. These inhibit and distract creative idea generation (Chan et al., 2015; Nijstad & Stroebe, 2006). The last mechanism can be labeled as an economic mechanism (Camacho & Paulus, 1995): When a good rating illustrates the success of a proposal, this again can lead to design fixation or social loafing. It is imaginable that users focus on pleasing the community by conforming and complying (Crutchfield, 1962; Kelman, 1961) with ideas that are rated as very successful, since it is the easiest way for them to provide a successful idea. This in return can diminish creative thinking and therefore result in a less creative submission. Based on these theoretical implications the following hypotheses are introduced:

H3a: If an evaluation in the form of ratings exists, lower task satisfaction will be shown than without the existence of an evaluation.

H3b: If an evaluation in the form of ratings exists, lower idea quality of the creative outcome will be shown than without the existence of an evaluation.

2.4 Possible interactions between number of ideas and existence of a rating mechanism

Since both independent variables can influence the experience and behavior of the user, an interaction effect between both of them can be assumed. Evaluation apprehension can occur no matter how many ideas are presented to the participant. It could also be argued that evaluation apprehension in the many ideas condition is higher. Because the higher number of shown ratings and ideas may indicate a greater audience, this can lead to a higher evaluation apprehension than

compared to the several or single idea condition (Bordia et al., 2006). Since the rating bars include more information to process, the information overload will also be further increased. Therefore the many idea condition that includes rating bars is likely to show even lower satisfaction rates and a fewer idea quality than the condition without the rating bars.

In the single idea condition the rating could increase design fixation due to the before described economic mechanism (Camacho & Paulus, 1995). When users see a well rated idea as the only one presented, the user could more likely fixate on that idea, because it seemed to be successful. If the idea would be rated as negative by the community, people might be motivated to look for another idea, which would reduce design fixation. In order to control for that effect the idea shown in the single idea condition was rated in a neutral, balanced way. Since it is unclear to predict an outcome that precisely tells the interaction between both independent variables a deductive approach is favored. Therefore two research sub-questions were formulated.

RQ1: In what way do the presented number of ideas of other users and the existence of an evaluation in the form of ratings interactively influence the task satisfaction of the user?

RQ2: In what way do the presented number of ideas of other users and the existence of an evaluation in the form of ratings interactively influence the creative outcome of the user?

2.5 Perceived innovativeness and attitude toward the initiating organization

As research has shown co-creation activities can positively impact the brand-customer relationship and brand image (Djelassi & Decoopman, 2013; Hsieh & Chang, 2016). When users have a feeling of success thinking of a good idea and are satisfied with the outcome, it can put them into a good mood. Those positive emotions could be misattributed and rub off on to the perception of the initiating organization via evaluative conditioning (Fennis & Stroebe, 2016; Jones, Fazio & Olson, 2009) since the organization is highly jointed with the task. Therefore it can be hypothesized that a positive co-creation experience with the organization can positively prime the image and the attitude towards this initiator. The action to openly ask customers for their opinion and valuing could be regarded as an innovative move. A company supporting co-creation may not only be considered as modern and open-minded, but could also be seen as more likable. A co-creation activity initiated by a brand can be described as a brand experience (Payne, Storbacka, Frow & Knox, 2009; Prahalad & Ramaswamy, 2004). Since a positive brand experience leads to increased brand satisfaction and brand loyalty (Brakus, Schmitt & Zarantonello, 2009), the attitude towards the initiating company should be impacted by the task satisfaction of the user. Therefore the following hypotheses are stated:

H4a: The higher the task satisfaction, the more innovative the initiating company is perceived.

H4b: The higher the task satisfaction, the more positive is the attitude towards the initiating company.

2.6 Task motivation and creative thinking as variables that affect co-creation

According to the componential theory of individual creativity (Amabile, 1997) a creative outcome depends on three different major components: expertise, task motivation and creative thinking. For every task certain knowledge is needed in order to succeed in developing creative ideas in this field. Since this study focuses on creating ideas in contexts most people can relate to, this factor can be neglected. But motivation can indeed be seen as an influence in co-creation contexts. Amabile (1997) differentiates between extrinsic (main urge to participate based on a goal apart from the work itself like winning a competition or being rewarded) and intrinsic motivation (main urge based on interest in the task itself), whereas she emphasizes the importance of intrinsic motivation for creative work. Extrinsic motivation on the other hand is more necessary for the implementation of ideas (Amabile, 1993). Since motivation can situationally and personally differ, this variable is hard to manipulate in an experiment. Therefore task motivation can be defined as a moderator that positively influences idea generation, task satisfaction and creative outcome:

H5a: Task motivation moderates the interaction of the number of ideas and the existence of an evaluation due to ratings, so that higher motivated users show a higher task satisfaction than less motivated users.

H5b: Task motivation moderates the interaction of the number of ideas and the existence of an evaluation due to ratings, so that higher motivated users show a better creative outcome than less motivated users.

The last factor, creative thinking, is also needed for idea generation and depends on personality to some extent, but can also be trained over time (Amabile, 1997); therefore creative thinking may influence the model as an external variable, that cannot be manipulated. This variable was surveyed as part of the study as a covariate.

The hypotheses reflect the paradoxical character of the crowdsourcing community (see *Figure **1***): An active, mutually evaluating and creative crowd can inspire and motivate users to come up with creative new ideas. It can also decrease satisfaction and participation by intimidating the user or guide her or him into a certain way of thinking. Furthermore the positive or negative co-creation experience can shape the user's view of the crowdsourcing initiator.

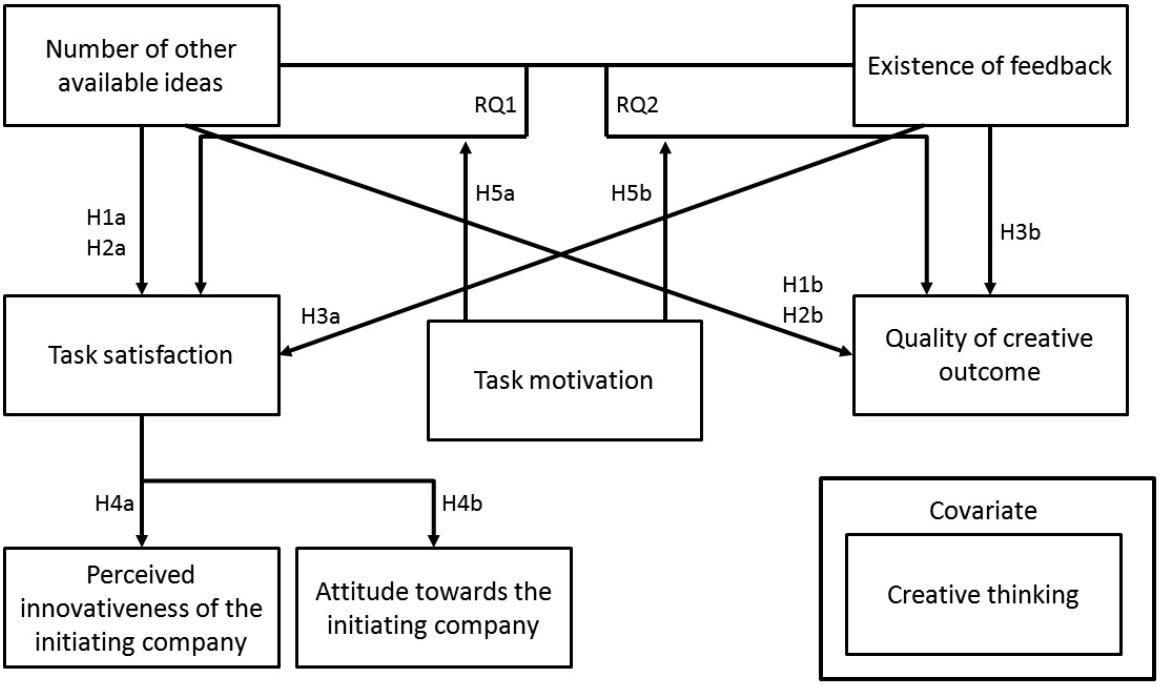

Figure 1. Graphical overview of the conceptual framework

3 Research design and methodology

3.1 Procedure

Based on the theoretical framework a 3x2 factorial experimental design as part of a cross-sectional study was executed. Therefore a fictional example inspired by the 'My Starbucks Idea' initiative was created. Here Starbucks customers can provide the brand with new ideas regarding their products, their brand experience, and their involvement (regarding social responsibility) (Starbucks, 2016). These ideas can be rated and commented on by other users and then Starbucks will possibly implement them. Inspired by this platform a mock-up café brand named 'Your Coffee' was created as the basis for the stimulus. This way the brand had no influence on respondents regarding their attitude towards the brand before seeing the stimulus. Participants were told that 'Your Coffee' was a successful brand in the US, which now launches in European countries and therefore had created a co-creation platform that asks about innovative but feasible ideas for their new cafés. In order to motivate participants to submit their ideas they were informed, that they were able to win one of three Amazon vouchers with the value of 15 EUR each, when providing an idea.

The conduct of a quantitative online survey was regarded as fitting since crowdsourcing is also embedded in an online context. As idea generation requires a certain degree of attention and is mostly carried out on personal computers, it was decided that a mobile version of the questionnaire should not be provided. The questionnaire was designed by using the Qualtrics Survey Software tool (Qualtrics, 2016). Participants that used a mobile phone to access the questionnaire could not participate and were instead informed that they should re-do the survey on a desktop PC or laptop. When asking participants to take part in the survey they were also informed beforehand that they could not participate via mobile devices. This should also guarantee that the stimulus was well readable since it was displayed as too small to read on a mobile device. The choice of using an online survey lead to several advantages: online questionnaires can be conducted in a timesaving and low cost matter and reach a high amount of people in a short time (Evans & Mathur, 2005; Wright, 2005). Online surveys can also be convenient for participants since they schedule their participation according to their plans and can stay at home while taking part (Evans & Mathur, 2005). Otherwise online questionnaires show a low response rate, can be regarded as spam by potential participants and are mainly based on self-selective sampling (Evans & Mathur, 2005; Wright, 2005). Therefore a high count of people had to be considered when sampling for the study. The data collection took place from 12.11.2016 to 02.12.2016.

After the introduction of the mock-up brand 'Your Coffee' and its crowdsourcing platform the manipulation of the independent variables was presented to the participants. The stimulus was shown first for 15 seconds before participants could proceed to the next page of the survey. This was

done to reassure that participants took at least a certain amount of time to read the stimulus. Especially in online surveys, where the survey environment cannot be controlled, participants show a relative low attention span (Evans & Mathur, 2005). So it was decided that by providing the stimulus for a certain timeframe this effect could be prevented. Afterwards participants could hand in their ideas. As pretesting showed (see 3.3) it was easier for participants when they could see the platform while writing down their ideas. Therefore the stimulus was provided a second time with the possibility to fill in an idea. Measurements regarding the dependent variables task satisfaction, attitude and perceived innovativeness towards the initiating company, the moderator task motivation and the covariate creative thinking as a control variable were queried.

After the quantitative survey a content analysis followed to rate the creative quality of the participants' ideas. Creativity in ideas cannot only be measured on a quantitative dimension (namely fluency as the total number of generated ideas in a certain timeframe and flexibility as the generated categories of ideas), but also in a qualitative way (Vosburg, 1998). Since creative quality can only be rated as a projective form of latent content and therefore depends on interpretation by the coders, intersubjective norm rules had to be set to guarantee validity (Potter & Levine-Donnerstein, 1999). This approach is reminiscent of the consensual assessment technique (Baer, Kaufman & Gentile, 2004) by Amabile (1982), where raters evaluate the level of creativity in ideas, solutions and products, which allows to objectively measure creativity. It had to be considered that the quality of the ideas is not only bound to innovativeness. Indeed very innovative ideas may be too unrealistic, impracticable or just not fitting to the given co-creation context. Therefore dimensions that describe the novelty, workability, relevance and specifity of an idea (Dean et al., 2006) were taken into account for idea quality analysis.

3.2 Independent variables

All six variants of the 3x2 design were implemented in an online survey as stimulus pictures showing the mock-up co-creation platform after a short explanation of the 'Your Coffee' brand. Those pictures served as the stimulus and contained the characteristics of the independent variables. This included the number of other users' ideas (platform showing a single (1) idea vs. platform showing several (6) ideas vs. platform showing many (21) ideas) and the existence of an evaluation in forms of rating bars (users see that the ideas are being rated by positive and negative votes represented by a rating bar vs. no public rating system on the platform). Hence six different stimuli were designed for testing (see Table 1 & appendix II).

The stimuli conditions were inspired by the 'My Starbucks Idea' webpage. Here several tables of information are given to the user when visiting the webpage. As an indication for the ideas of other

users a category named ‘most recent ideas’ was adopted from the Starbucks page. In the respective condition a certain amount of ideas from other users was shown with their titles.

Table 1. Overview of the six different experimental conditions with respect to number of other users' ideas and availability of a rating bar

		Public evaluation via rating bar	
		Existing	Non-existing
Number of other users’ ideas	Single idea	Single idea of another user on a platform with rating bars	Single idea of another user on a platform without rating bars
	Several ideas	Several ideas of other users on a platform with rating bars	Several ideas of other users on a platform without rating bars
	Many ideas	Many ideas of other users on a platform with rating bars	Many ideas of other users on a platform without rating bars

In order to transfer the evaluation system to the stimuli, a rating bar was added to each idea shown. Here participants could see, that other members of the community had evaluated each idea with a positive or negative rating (thumbs-up or thumbs-down). The bar showed the percentage of positive responses in green and the negative ratings in red. Such rating illustrations are also commonly used on platforms like ‘YouTube’. There exists evidence that anonymity in a community reduces evaluation apprehension (Connolly, Jessup & Valacich, 1990). Therefore in order to clarify that users cannot hide behind internet anonymity when being evaluated, the public rating conditions also featured the real names of the ideas’ authors. This indicated that a real community was present, each idea was evaluated publicly by the members and all ideas could be linked to a real person’s name. In the non-evaluative condition both the rating bars and user names were missing. It can be argued that rating bars and user names can serve as two independently different influences towards idea generation. But pre-testing showed (see 3.3), when presenting author names on the platform, the feeling of being publicly evaluated is still created. This ultimately indicated a public rating – even without showing rating bars. Therefore both rating bars and user names were only integrated in the evaluative condition.

Among the heading ‘SHARE IDEAS to make our coffee your coffee’ all six stimuli furthermore contained the logo of the café, a sign-in request, a picture of one of the cafés and the brand’s fictional slogan ‘Your Coffee, Your Ideas’. The idea titles, author names and rating bars all received a

heading (‘title’, ‘author’, and ‘rating’). This was included in order to inform participants that the ideas shown in the stimulus were just the titles of the ideas. This should nudge them to submit their ideas in the designated way: with a short title and a following deeper description of the idea. Treatment check questions were integrated at the end of the questionnaire to assure that the manipulation was experienced by the participants as planned. The treatment check was done at the end of the questionnaire to eliminate possible halo effects that these questions could cause on other measures in the survey.

3.3 Pre-testing

Beside the treatment check questions a qualitative pre-test with five participants should guarantee the intersubjectivity of the stimuli. Therefore the mock-up screens of the co-creation platform were presented to the participants and differences were discussed. It was ensured that the screens clearly showed the number of other ideas and the existence/non-existence of a rating for the participants in the survey. While the number of ideas was easily recognized in the stimuli, the indication of a rating system was not that obvious. It became clear during discussions that especially in the non-rating condition some participants still expected a rating by the community since this procedure is common on crowdsourcing platforms. Therefore it was decided that no usernames should be mentioned in the non-evaluation condition. This should imply that there is no community that publicly assesses the ideas.

Furthermore the whole online questionnaire was pretested before conducting the experiment in order to evaluate potential problems for the participants and to determine the expected time needed for filling in the questionnaire. Generally the pre-testers showed no problems with completing the survey. On average it took them about ten to 15 minutes to complete the questionnaire, mainly depending on how long they thought about an idea and on how detailed they described it. When describing the idea some participants forgot the exact contents of the stimulus and wanted to see it again. Therefore the form to upload an idea was put on the same page as the stimulus in the online survey. In order to secure that participants provide a detailed description of their idea, it was stressed in the idea form, that a detailed described idea would more easily result in an implementation. Additionally the form mentioned that ‘Your Coffee’ would be thankful for a deeper explanation. It was decided, that a good description should not be forced by enlarging the chance of winning a voucher when providing more information. This would have been a further influence on the motivation of participants. In addition, some words in the questions were put in bold letters to emphasize certain parts of the questions. For example it was stressed that respondents should only characterize one of their ideas.

3.4 Participants

A total of 273 German-speaking participants were queried in the online survey. The participants were addressed in a self-selective way by using mailing lists of various universities as well as via snowball principle by posting the survey on social media platforms. The survey took place from the 12.11. to the 02.12.2016. After the deletion of participants that did not answer the control questions correctly, 228 participants aged between 17 and 65 were left. In total 205 ideas were provided, which means that 23 participants did not provide an idea. Because task satisfaction and idea quality cannot be determined when no idea is being developed, these users were not further considered in the sample. The analyzed sample consisted of a higher amount of females (67.8 %) and could be described as rather young (M = 23.83, SD = 6.93, Mo = 20, Me = 22.00). There existed a right-skewed distribution regarding age with skewness of 3.10 (SD = .17) and kurtosis of 11.71 (SD = .34).

3.5 Measurement

After the display of the stimulus and the measurement of basic demographics (age, gender) participants were asked to participate in contributing an idea. If a participant added an idea it was later scored based on its creativity by a coder in a content analysis. Further scales measured task satisfaction, task motivation, attitude towards the initiating company, perceived innovativeness of the company and creative thinking.

To measure task satisfaction a shortened task satisfaction semantic differential by E. F. Stone (1977) was used. It consists of opposing adjectives (frustrating – gratifying, nice – awful, pleasing – annoying etc.) on a seven-point Likert scale that assess the satisfaction with the task and its outcome.

Inspired by the Multidimensional Work Motivation Scale (Gagné et al., 2014), a scale was created to measure the task motivation for participating in this co-creation. Here items with a seven-point Likert scale based on the question ‘Why did you put efforts or no efforts into finding an idea for ‘Your Coffee’?’ can measure intrinsic motivation (Because the task was interesting, Because the task was exciting) as well as amotivation (I did little because I didn’t think this work is worth putting efforts into). One item to include extrinsic motivation (Because I will be rewarded with the voucher) was added as well.

Six items that measure the attitude towards the initiating company were created. Three of them focused on the perceived innovativeness of the company (I would describe ‘Your Coffee’ as an innovative company, I think ‘Your Coffee’ is an open-minded company, ‘Your Coffee’ makes creative decisions), whereas the remaining three measured the attitude towards the company on a more general level regarding customer-friendliness (I would like to visit a ‘Your Coffee’ café, ‘Your Coffee’ cares about its customers, I find ‘Your Coffee’ very likable). All items were provided on a seven-point Likert scale.

For creative thinking as a trait of personality and long-time learning the self-perceived creativity scale as used by Santos, Uitdewillingen and Passos (2015) was convenient. Here a seven-point Likert scale is used in order to self-assess one's creativity (I feel that I am good at generating novel ideas; I have confidence in my ability to solve problems creatively; I have a knack for developing the ideas of others further; I am good at finding creative ways to solve problems). The complete survey was translated into German, since only German-speaking participants were aimed at as participants. The English version of the questionnaire is available in the appendix (I).

Table 2. Overview and scale descriptions of the dependent variables and covariates surveyed in the questionnaire

Scale descriptions	**N**	**N-Items**	**Mean**	**SD**	**Rel. (α)**
Measurement scales:					
Task satisfaction[1]	205	5	4.89	1.07	.86
Motivation[1]	205	4	4.50	1.14	.71
Creative thinking[1]	205	4	4.85	1.11	.87
Perceived Innovativeness of the company[1]	205	3	5.06	1.01	.80
Attitude towards the company[1]	205	3	5.19	1.00	.77

1 7-point Likert scale (1 = totally disagree / 7 = totally agree)

Table 2 shows the scale descriptions of the measured variables. In general participants showed an above average satisfaction with the task and were motivated. Since task motivation was regarded as a moderator, two groups consisting of motivated versus non-motivated participants were created. Therefore a median-split at the median 4.5 of task motivation was performed which resulted in two groups: one unmotivated group (N = 86) and one motivated group (N = 119). Participants also considered themselves as moderately creative. Particular high agreement can be found regarding a positive attitude towards the initiating company as well as a high perceived innovativeness of the company. Cronbach's alpha reliability scores were computed and signified a good and satisfactory reliability in all measurements.

3.6 Content Analysis

Creative outcomes are not only characterized by originality, but also by how useful and relevant they are with regard to the problem (Cropley, 2000). Therefore a multi-category codebook by Dean et al. (2006) was provided to two coders in the subsequent content analysis in order to rate the creativity of the submitted ideas. The authors developed this coding scheme to rate the quality of ideas based on a literature review of 90 articles. According to them creative ideas fulfill four different criteria with each criterion containing two measurable dimensions: novelty (originality and paradigm relatedness), workability (acceptability and implementability), relevance (applicability and effectiveness) and specificity (completeness and implicational explicitness). The authors' explanations of these dimensions and fitting examples were used to guide the raters. The examples were based on the

authors' case study of a university restaurant that loses a lot of customers. By using those it was ensured that raters were able to interpret the scores according to the 'Your Coffee'-case and were not biased by the given examples. Paradigm relatedness is context-dependent (Dean et al., 2006). That means that it had to be adapted to the café context of this study. The dimensions regarding novelty, workability and relevance focused on the depth and degree of development of the idea and could be rated from a minimum of one to a maximum of four points. The remaining two categories belonging to the specificity criterion emphasize the articulation of the idea and could be rated from one to three as a maximum. Based on this system each idea could be judged with a minimum total score of eight (very low idea quality) up to a maximum total score of 30 (very high idea quality). Since both raters were native German speakers the codebook was translated into German. An English version was added to the appendix (III).

Table 3. Overview and scale descriptions of the dimensions of the content analysis summed up into the dimensions novelty, workability, relevance, specifity and the total idea quality

Scale descriptions	**N**	**Scale range**	**Mean**	**SD**	**Rel. (α)**
Content analysis dimensions:					
Originality[1]	205	1 - 4	2.06	.94	.90
Paradigm relatedness[1]	205	1 - 4	1.87	1.00	.96
Novelty[3]	205	2 - 8	3.93	1.75	-
Acceptability[1]	205	1 - 4	3.78	.47	1.00
Implementability[1]	205	1 - 4	3.65	.59	.73
Workability[3]	205	2 - 8	**7.43**	**.82**	**-**
Applicability[1]	205	1 - 4	2.97	.69	.91
Effectiveness[1]	205	1 - 4	2.84	.39	.80
Relevance[3]	205	2 - 8	5.81	.87	-
Completeness[2]	205	1 – 3	2.26	.77	1.00
Implicational Explicitness[2]	205	1 - 3	2.08	.65	.86
Specifity[3]	205	2 - 6	4.34	1.28	-
Total idea quality[4]	205	8 - 30	21.51	2.83	-

1 4 point range (1 = not accomplished / 4 = completely accomplished)
2 3 point range (1 = not accomplished / 3 = completely accomplished)
3 score as sum of both before mentioned dimension scores
4 score as sum of all dimension scores

After the rating of the 205 ideas according to the scheme, 23 (>10 %) of the ideas were again coded by the second rater. Based on those results Krippendorff's alpha was computed as an indicator for interrater reliability. For all eight dimensions reliable values were achieved (see Table 3).

The participants' ideas in general yielded mediocre to low novelty scores. This means many ideas were more standardized and often based on already existing ideas like new flavors for coffee. Only a few were very innovative ones. Since novelty shows the highest standard deviation of all dimensions, there are the biggest differences between participants in this category. The high workability score can be attributed to be a result of a low novelty score, since simple ideas are often the easiest to incorporate. In general participants' ideas were aimed at improving customer satisfaction (as stated in the task), which resulted in a mediocre to high relevance rating. There is a greater deviation in the specifity score, which shows that some ideas were depicted in detail, whereas others were described in an insufficient way.

4 Results

4.1 Test of homogeneity

The distribution of certain characteristics in the experimental groups can have an influence on the dependent variables and threaten the significance of the results. This is why the homogenous distribution of the groups had to be reviewed. Table 4 shows an overview of the homogeneity of the six conditions.

Table 4. Comparison of the sample characteristics (age, creative thinking) in the six different experimental conditions

	With Rating		Without Rating	
	Mean	**SD**	**Mean**	**SD**
Single idea of another user				
Age[1]	23.68	5.43	27.09	11.81
Creative thinking[2]	4.69	1.38	4.89	1.09
	N = 34		N = 33	
Several ideas of other users				
Age[1]	24.59	7.70	22.86	4.86
Creative thinking[2]	4.59	1.24	4.87	.92
	N = 32		N = 37	
Many ideas of other users				
Age[1]	22.56	3.53	22.58	5.12
Creative thinking[2]	4.89	1.05	4.75	.98
	N = 34		N = 38	

1 Self-reported

2 Self-reported on 7-point Likert scale (1 = totally disagree / 7 = totally agree)

There were some differing distributions of the experimental groups due to the deletion of participants that did not answer the manipulation check questions correctly. This resulted in a heterogeneous distribution regarding age ($F(5, 199) = 2.23$, $p = .05$), however no differences regarding creative thinking could be found ($F(5, 199) = .94$, $p = .46$). When looking at the 23 participants that did not provide an idea, there was no significant difference between the experimental groups regarding the number of users not participating ($X^2 (5, 228) = 8.61$, $p = .13$).

4.2 Task satisfaction

A three-way between subjects ANCOVA (3x2x2) was conducted with number of ideas and the existence of a rating as independent variables and task satisfaction as a dependent variable. Task motivation was included as a moderator. Creative thinking was added as a further covariate.

No significant effects of number of ideas ($F(2, 192) = .93$, $p = .40$) and of the existence of a rating ($F(1, 192) = .75$, $p = .39$) on task satisfaction were found. But there was a significant main effect of task motivation on task satisfaction ($F(1, 192) = 60.72$, $p < .01$, $\eta^2 = .24$). More motivated users showed a higher satisfaction with the outcome of the task ($M = 5.38$, $SD = .85$) than not very motivated users ($M = 4.22$, $SD = .98$).

No significant interaction effects regarding task satisfaction were found. The interaction of number of ideas and rating on task satisfaction was not significant ($F(2, 192) = .28$, $p = .76$). The interaction between the number of ideas and motivation ($F(2, 192) = 1.35$, $p = .26$) as well as the interaction between existence of rating and task motivation ($F(1, 192) = 1.55$, $p = .22$) had no significant effect on task satisfaction. An interaction of all three independent variables showed no significance either ($F(2, 192) = 1.10$, $p = .34$).

Finally, the effect of creative thinking (the covariate) was significant ($F(1, 192) = 24.84$, $p < .01$, $\eta^2 = .12$). It showed that participants that think in more creative ways were more satisfied with their outcomes than participants who think in less creative ways. Due to these findings the hypotheses H1a, H2a and H3a could not be confirmed. Since a direct main effect of task motivation and not a moderation of an interaction was found, H5a could also not be verified. Contrary to RQ1 no interaction effects were found.

4.3 Quality of the creative outcome

4.3.1 Total idea quality

Regarding the effects on the total idea quality, a three-way ANCOVA with and number of ideas and the existence of a rating as independent variables was conducted. Task motivation was included as a moderator. Creative thinking served as a covariate. The total idea quality score was based on the four determined dimensions of idea quality: novelty, workability, relevance and specifity (Dean et al., 2006)

There were no main effects regarding number of ideas ($F(2, 192) = .93$, $p = .40$) and the existence of ratings ($F(1, 192) = .75$, $p = .39$). A significant main effect of motivation on the total idea quality was found ($F(1, 192) = 14.07$, $p < .01$, $\eta^2 = .09$). More motivated participants showed a higher total idea quality ($M = 22.26$, $SD = 2.60$) than not very motivated participants ($M = 20.48$, $SD = 2.83$).

There were no interaction effects between number of ideas and existence of ratings ($F(2, 192) = 2.20$, $p = .11$), between number of ideas and task motivation ($F(2, 192) = .70$, $p = .50$) nor between existence of ratings and task motivation ($F(1, 192) = .05$, $p = .83$). But an interaction effect between the number of ideas, existence of a rating and motivation that affects the total idea quality ($F(2, 192) = 3.29$, $p = .04$, $\eta^2 = .03$) was found. Being part of the three way interaction with number of ideas and existence of a rating, task motivation can be labeled as a moderator.

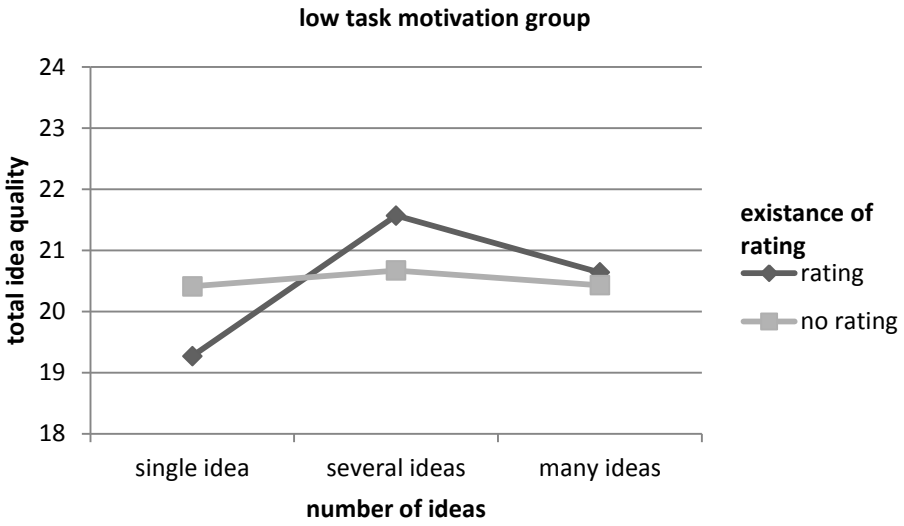

Figure 2. Total idea quality means in the low task motivation group by number of ideas and existence of rating

Figure 2 shows that for low motivated participants a rating only works better in the several idea condition (M = 21.57, SD = 2.71) compared to the non-rating group (M = 20.66, SD = 3.20). Especially in the single idea condition the rating has a negative impact generating the worst idea results (M = 19.27, SD = 2.91). In this case the non-rating group generated better ideas (M = 20.41, SD = 2.24). In the many idea condition both rating (M = 20.64, SD = 2.90) and non-rating conditions (M = 20.43, SD = 3.08) achieved similar idea quality scores.

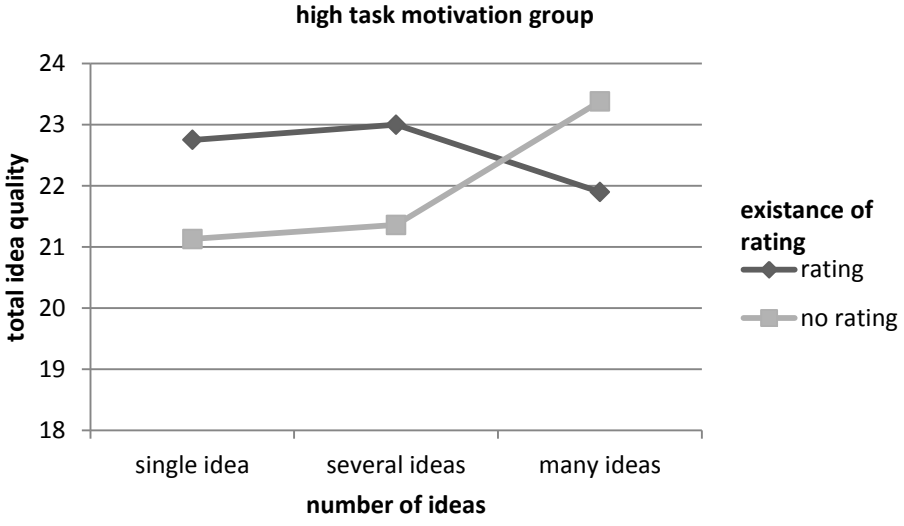

Figure 3. Total idea quality means in the high task motivation group by number of ideas and existence of rating

Figure 3 shows a different situation for high motivation. Here a rating works better except when many ideas are shown. In this case without a rating (M = 23.38, SD = 2.50), higher scores were obtained than with a rating (M = 21.90, SD = 1.94). For several ideas the rating condition (M = 23.00,

SD = 2.22) can be favored to the non-rating condition (M = 21.36, SD = 2.12). The same is true in the single idea condition (rating: M = 22.75, SD = 3.00, non-rating: M = 21.13, SD = 3.30). However, it can be stated that an increase of number of ideas from single to several in all cases led to a higher idea quality.

The covariate creative thinking had a significant positive effect on the total idea quality ($F(1, 192) = 8.42$, $p < .01$, $\eta^2 = .04$), showing that more creative thinking participants came up with ideas of a higher quality. Based on these findings the hypotheses H2b and H3b could not be confirmed. H1b and H5b were verified.

4.3.2 Idea novelty

To get more specific insights with regard to the research question RQ2, each category of idea quality was analyzed. This was also done since these categories can counter each other. Therefore it was decided to clarify the influence towards the four components of idea quality in order to gain a deeper understanding on how idea generation can be positively affected. A three-way ANCOVA was performed with the aforementioned factors. Here the dependent variable was the novelty score of the ideas.

For novelty no main effects were found. Number of ideas ($F(2, 192) = 1.32$, $p = .27$), existence of ratings ($F(1, 192) = .56$, $p = .46$) and task motivation ($F(1, 192) = .20$, $p = .66$) had no significant influence on the novelty of the idea.

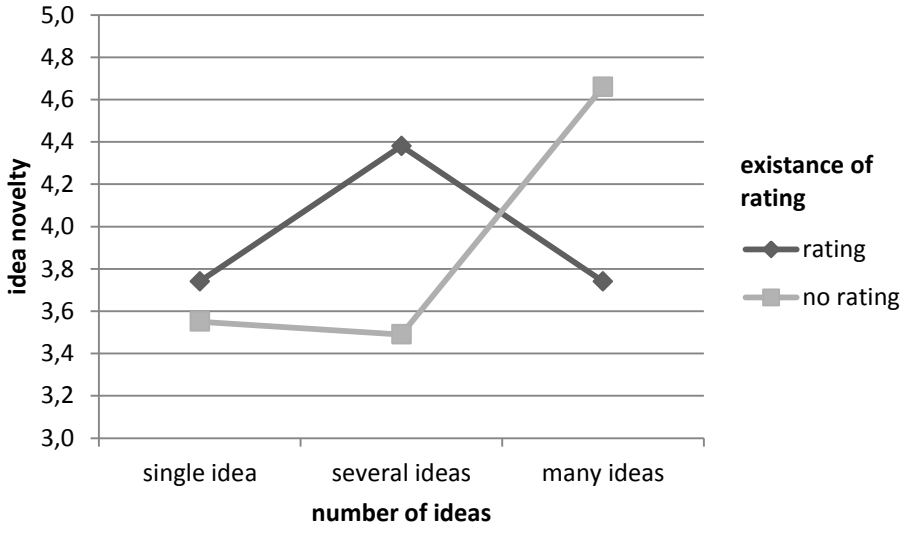

Figure 4. Idea novelty means by number of ideas and existence of rating

The interaction between number of ideas and motivation was significant ($F(2, 192) = 3.69$, $p = .03$, $\eta^2 = .04$). Figure 4 shows an overview of this interaction. The single idea conditions created low novelty scores independently of the existence or absence of ratings (with rating: M = 3.74, SD = 1.77, without

rating: M = 3.54, SD = 1.75). A low novelty score means that the idea presented does not add much to the already existing ideas. In both single idea conditions users may have copied the concept of the provided idea which was centered on new coffee flavors resulting in lower novelty scores. The several idea condition with ratings showed significantly higher novelty scores (M = 4.38, SD = 1.80) than without ratings (M = 3.49, SD = 1.54). In the many idea conditions this effect was reversed. Here the absence of ratings created higher novelty results (M = 4.66, SD = 1.81) than the condition with ratings (M = 3.74, SD = 1.60).

Aside from this interaction effect there were no further interactions. Neither the two-way interaction between the number of ideas and task motivation ($F(2, 192) = 1.68$, $p = .19$) and between rating existence and task motivation ($F(1, 192) = .12$, $p = .73$), nor the interaction of all three factors ($F(2, 192) = 6.73$, $p = .08$) showed significant results.

Again the effect of the covariate was significant ($F(1, 192) = 20.87$, $p < .01$, $\eta^2 = .10$), which shows that participants with high scores in creative thinking came up with more novel ideas.

4.3.3 Idea workability

The three-way ANCOVA of the factors on workability revealed that the number of ideas had no significant effects on idea workability ($F(2, 192) = .64$, $p = .53$). There were marginally significant differences due to the existence of a rating mechanism ($F(1, 192) = 3.32$, $p = .07$, $\eta^2 = .02$). Participants without a rating created more realistic ideas (M = 7.50, SD = .72) than participants with a rating (M = 7.35, SD = .91). Furthermore a significant effect of task motivation ($F(1, 192) = 6.17$, $p = .01$, $\eta^2 = .03$) could be found. Ideas from users that were motivated resulted in more doable and realistic ideas (M = 7.50, SD = .74) than ideas by not motivated users (M = 7.34, SD = .92).
There were no interaction effects that influenced workability of the idea. There were no findings on the interactions between the number of ideas and the existence of ratings ($F(2, 192) = .33$, $p = .72$), between the number of ideas and task motivation ($F(2, 192) = .80$, $p = .45$) nor between the existence of ratings and task motivation ($F(1, 192) = .14$, $p = .71$). There neither was a three-way interaction between all three factors ($F(2, 192) = 2.20$, $p = .11$).

The covariate creativity also affected workability significantly ($F(1, 192) = 13.74$, $p < .01$, $\eta^2 = .07$) in a negative manner. This means that more creative thinking users come up with ideas that are more difficult to implement.

4.3.4 Idea relevance

The three-way ANCOVA on relevance with the aforementioned factors showed no effects of number of ideas ($F(2, 192) = .32$, $p = .73$) and the existence of ratings ($F(1, 192) = 3.16$, $p = .08$). However, there was a main effect of motivation on relevance ($F(1, 192) = 17.24$, $p < .01$, $\eta^2 = .08$). Less

motivated users produced ideas that are less relevant (M = 5.51, SD = .97) than highly motivated users (M = 6.03, SD = .730).

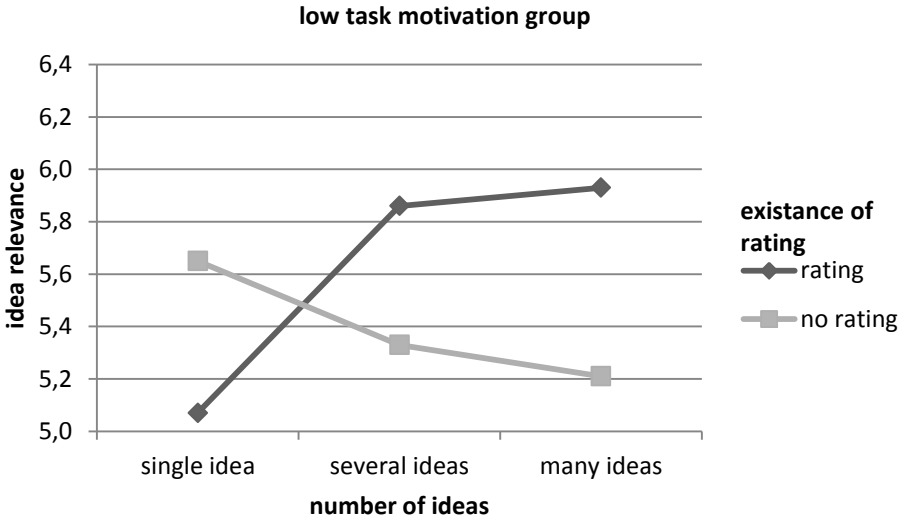

Figure 5. Idea quality means in the low task motivation group by number of ideas and existence of rating

There was also an interaction effect of number of ideas, existence of ratings and task motivation on relevance of the ideas ($F(2, 192) = 5.81$, $p < .01$, $\eta^2 = .06$). Figure 5 shows that for the not motivated users the relevance score rose in the rating conditions when increasing the number of visible ideas from single (M = 5.07, SD = 1.03) to several (M = 5.86, SD = .66) to many (M = 5.93, SD = .92). The relevance score decreased in the non-rating conditions from single (M = 5.65, SD = .70) to several (M = 5.33, SD = 1.00) to many (M = 5.21, SD = 1.25).

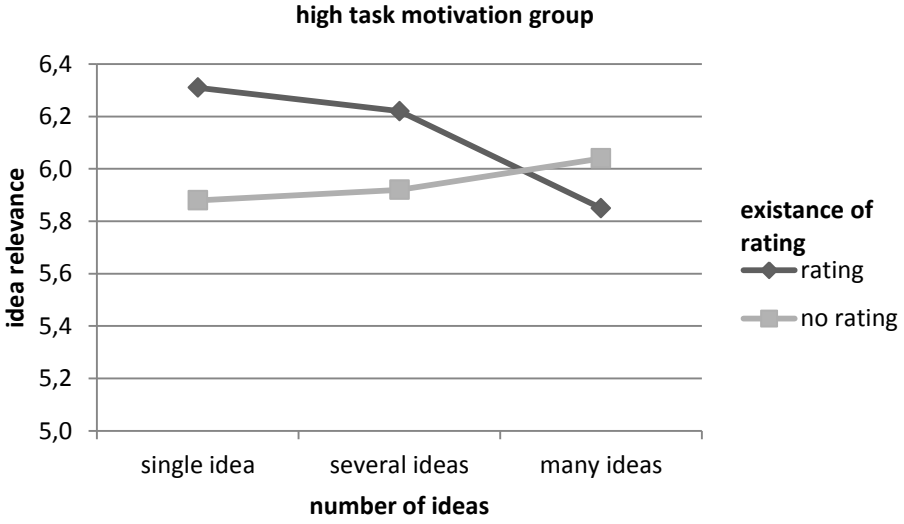

Figure 6. Idea quality means in the high task motivation group by number of ideas and existence of rating

The opposite was the case for motivated users. Figure 6 shows that the most relevant ideas were given by participants in the single idea condition with ratings (M = 6.31, SD = .87). By increasing the numbers of visible ideas to several (M = 6.22, SD = .55) and many (M = 5.85, SD = .67) the score dropped when ratings existed. In the case of the non-rating conditions the relevance score increased when adding more ideas of other users from single (M = 5.88, SD = .72) to several (M = 5.92, SD = .55) to many (M = 6.04, SD = .91).

The interaction between number of ideas and the existence of ratings ($F(2, 192) = 1.47$, $p = .23$), between the number of ideas and task motivation ($F(2, 192) = .82$, $p = 44$) and between the existence of ratings and task motivation ($F(1, 192) = .08$, $p = .78$) showed no significant effects.

The conducted ANCOVA showed that relevance was the only category of idea quality that was not significantly affected by creative thinking ($F(1, 192 = 17.24$, $p = .53$).

4.3.5 Idea specifity

The three-way ANCOVA with the before mentioned factors on idea specifity revealed that the number of ideas ($F(2, 192) = 2.24$, $p = .11$) and the existence of ratings ($F(1, 192) = 2.28$, $p = .13$) did not show significant effects. There again was a significant main effect of task motivation on specifity ($F(1, 192) = 18.09$, $p < .01$, $\eta^2 = .09$). More motivated users described their ideas on the platform in a more detailed way (M = 4.71, SD = 1.14) than less motivated users (M = 3.83, SD = 1.30).
There were no interaction effects that affected specifity. The interactions between number of ideas and the existence of ratings ($F(2, 192) = .64$, $p = .53$), between number of ideas and task motivation ($F(2, 192) = .37$, $p = .70$) nor between the existence of ratings and task motivation ($F(1, 192) < .01$, $p = .96$) did not generate significant effects. The interaction of all three variables neither resulted in a significant effect ($F(2, 192) = 1.36$, $p = .26$).

Specifity was affected by the covariate creative thinking ($F(1, 192) = 4.59$, $p = .03$, $\eta^2 = .02$), showing that participants that think in more creative ways also described their ideas in more detail.

4.4 Effect on attitude toward and perceived innovativeness of the initiating company

Possible effects of the independent variables number of ideas and existence of rating, the moderator task motivation and the covariate creativity on attitude towards the initiating company and its perceived innovativeness were analyzed. Therefore two three-way ANCOVAS were conducted using the aforementioned factors.
With regard to attitude toward the initiating company there were no main effects of number of ideas ($F(2, 192) = 1.01$, $p = .37$) and the existence of a rating ($F(1, 192) = .50$, $p = .48$). However the moderator task motivation had an effect on the attitude toward the company ($F(1, 192) = 49.35$, $p <$

.01, η^2 = .20). More motivated participants had a more positive attitude toward the company (M = 5.57, SD = .80) than not motivated participants (M = 4.66, SD = .94).

There were no interaction effects due to the interaction number of ideas shown and the existence of a rating ($F(2, 192) = 2.17$, $p = .12$), nor due to the interaction of number of ideas and task motivation ($F(2, 192) = 1.01$, $p = .37$), nor due to the interaction of the existence of a rating and task motivation ($F(1, 192) = .23$, $p = .63$). An interaction between all three factors did also not result in a significant difference ($F(2, 192) = 1.62$, $p = .20$).

The covariate creative thinking had no effect on attitude toward the company either ($F(1, 192) = .13$, $p = .72$).

Concerning the perceived innovativeness of the initiating company no main effects of number of ideas ($F(2, 192) = 1.24$, $p = .29$) and existence of a rating ($F(1, 192) = .01$, $p = .91$) were found. Again task motivation showed a significant difference ($F(1, 192) = 28.64$, $p < .01$, $\eta^2 = .13$). Motivated users thought of 'Your Coffee' as a more innovative company (M = 5.38, SD = .97) than less motivated users (M = 4.61, SD = .89).

There were no interaction effects found with respect to number of ideas and existence of a rating ($F(2, 192) = 2.51$, $p = .09$), number of ideas and task motivation ($F(2, 192) = 1.08$, $p = .34$), and existence of a rating and task motivation ($F(1, 192) = .03$, $p = .86$). All three factors also showed no interaction effect on perceived innovativeness ($F(2, 192) = .36$, $p = .70$).

Creative thinking also had no effect on perceived innovativeness ($F(1, 192) = .57$, $p = .45$).

In order to analyze the effect task satisfaction has on the attitude and perceived innovativeness of the initiating company, two Pearson correlations were conducted. These showed that there is a positive relationship between task satisfaction and attitude toward the initiating company ($r(205) = .48$, $p < .01$). Furthermore there is a positive relationship between task satisfaction and perceived innovativeness of the initiating company ($r(205) = .30$, $p < .01$). Based on the found correlations H4a and H4b were confirmed.

5 Discussion

5.1 Theoretical implications

It was shown that there exists a negative effect of design fixation on idea generation co-creation platforms: In all cases the single idea conditions led to a lower total idea quality compared to the concurrent several idea conditions. Low novelty scores in the single idea conditions support the claim that people stick to the idea that is shown to them when working on a creative task (Jansson & Smith, 1991; Vasconcelos & Crilly, 2016). In the single idea condition the one given idea was about a new coffee flavor and therefore most of the contributed ideas in this condition were also centered on coffee flavors. However, aside from novelty of the idea no other dimensions were affected by design fixation. With regard to relevance, workability and specifity the single idea conditions did not result in significantly worse scores. The single idea condition consisted of a relevant and realizable idea. People that built on that idea based on design fixation therefore also generated good results in those dimensions. This supports the assumption that design fixation only influences the innovativeness and no other aspects of the idea: Design fixation indeed leads to ideas that offer a possible solution to the given problem (Vasconcelos & Crilly, 2016); those ideas are just not very original or innovative. There was no negative influence of design fixation on task satisfaction as well. Users that did provide an uninspired idea based on design fixation in the single idea conditions were not less satisfied with their results than other users. This clarifies that design fixation occurs unconsciously to the user (Perttula & Liikkanen, 2006; Vasconcelos & Crilly, 2016). The user is not aware that he or she performed worse and is therefore still satisfied with the outcome. The results show that design fixation can occur during online creativity tasks and especially affect the novelty of the proposed idea. But it is possible to adapt the platform design accordingly to avoid it, especially by providing further ideas and ratings to the user.

This study also provides evidence that the originality or novelty of the idea is not dependent on task motivation, like the other dimensions of idea quality. Novelty can instead be fostered through the design of the co-creation platform. Therefore the originality of the generated ideas cannot be improved by motivating the users, but by adapting the design of the platform. Providing several or many ideas to the users and applying a rating system has positive but also negative effects. The social facilitation and social loafing theory (Aronson, Wilson & Akert, 2006) may provide possible explanations for these effects on idea novelty and add into the elaborated theoretical framework. It shows that the interaction between information overload, design fixation and evaluation apprehension might be more complex than assumed. In the model by Aronson et al. (2006) the effect of the presence of others as an audience can lead to different outcomes in dependence with the task difficulty. If other individuals are available and the task is directly evaluable this can cause a fear of assessment. Supposing the usage of ratings stimulates the availability of an evaluating audience this

model can explain the found effects. If the task is easy, the usage of ratings leads to an improved novelty performance since individuals are positively aroused by the fear of assessment. This could have been the case in the single idea and several idea conditions with ratings. The task of finding an idea for 'Your Coffee' is easy and the possibility of being rated might lead to a positive arousal. Therefore the novelty scores of the ideas in those conditions might have performed better than without the rating system. In those cases – without the possibility of being evaluated – social loafing instead of social facilitation would set in according to the model. In the conditions without ratings the easy difficulty of the task might have led to social loafing and a declined performance in finding original ideas. Here the user relied on the work of the other members. In the many idea conditions the task may become more difficult: due to information overload it is hard to find another additional meaningful and creative idea. Here the effects of social facilitation and social loafing would be inverted: with a rating system, evaluation apprehension is created and participants show a declined performance. When no rating as an assessment is indicated, users may be relieved and not intimidated by the evaluating audience. They can thus focus more on a solution to the difficult task. Therefore the most original ideas were generated in the several ideas condition with ratings and in the many idea condition without ratings. A comparable outcome was found regarding the total idea quality, but only when users were highly motivated.

This shows that task motivation is a central key to the success of idea generation activities. Task motivation positively influences the creative outcome by improving workability, relevance, and specifity of the idea and thus moderates the total idea quality. Task motivation also affected task satisfaction directly. Therefore motivated users are also more satisfied with their co-creation outcomes. This means, that although task motivation does not affect the originality of the proposal, it is still essential for co-creation. Creative thinking can also be seen as an important factor, which is needed for a successful outcome. Users, that have a more creative way of thinking about problems create more novel, relevant and specific ideas and are more satisfied with their outcome. Only workability is negatively affected by creative thinking since creative users tend to come up with ideas that are more difficult to put into reality. The crowdsourcing initiator has to ensure to appeal to creative users and to increase task motivation. Both intrinsic and extrinsic motivation is meaningful in that context and can be boosted by providing incentives and an interesting, playful or fun approach to the task (Schultheiss, Blieske, Solf & Staeudtner, 2013).

Even after a user has delivered a high quality idea the effects of co-creation do not end. After the participation long-term effects can set in. For an example engagement in co-creation can lead to a higher purchase intention of products (Hsieh & Chang, 2016). The findings of this current study add to these assumptions. It was found that participation in idea generation can have effects on the

users' attitude. A strong relationship between task satisfaction and a positive attitude toward the initiator and its perceived innovativeness may show that successful co-creation activities can also improve the image of an organization (Djelassi & Decoopman, 2013). Since only correlations between task satisfaction and attitude e.g. perceived innovativeness were found, one might argue that no causal but merely correlational relationships were revealed. The results could also possibly show that users with a high attitude toward the company are simply more satisfied with their outcomes. This would switch the presumed cause and relation effect. But it has to be considered that the stimulus material offered a fictional brand, which was unknown to the participants before the experiment. Therefore in the beginning no attitudes toward that brand were available, that could cause differing task satisfactions. The only ways attitudes could be formed were due to being exposed to one of the different stimuli or due to performing the idea generating task. The performed ANCOVA did not reveal significant effects of the different stimuli on attitude and perceived satisfaction. That is why the different outcomes of attitude and perceived innovativeness can only be attributed to the performance of the task and thus the task satisfaction. This claim is supported by the significant effects of task motivation on attitude and perceived innovativeness: Since task motivation influences task satisfaction, which again correlates with the attitude toward the company and its perceived innovativeness, this connection can be explained.

5.2 Practical implications

These theoretical implications also lead to practical consequences. Organizations are using co-creation to obtain market research results in an easy way and decrease risks when implementing innovations (Constantinides et al., 2015; Schemmann et al., 2016). A high quality of user proposals is targeted by those organizations. This study can help to identify best practice approaches to achieve this. The outcomes of the co-creation task, like the innovativeness of the idea, are based on the social digital environment and thus are biased by the design of the co-creation platform. A good design has to overcome the paradoxical influence of the community. This can be done by providing not too few and not too much information about the ideas and performance of other contributors. Initiators should closely analyze their target group and consider how the task of the co-creation activity fits to this group before building a platform. A clear vision of what to expect from the crowdsourcing user is needed in order to secure a good outcome for all involved parties. The best possible outcomes in this study were generated in the high motivated participant group in the several idea rating condition and the many idea non-rating condition. In those cases design fixation and information overload may be averted, but still enough information may be offered as orientation for the user at the same time. This shows that aside from task motivation creative idea generation tasks can also be influenced by the design of the online environment, which determines the social influence. Organizations have to be aware that a certain amount of ideas is needed for the users to

present them a wide variety of idea possibilities. On the other hand when many ideas are necessary to be shown, it can be useful to exclude a rating system.

Co-creation can be seen as a powerful marketing tool (Fernandes & Remelhe, 2015). As found in this study one condition for this is, that users have to be satisfied with the contribution they make. This becomes especially evident when looking at the many negative crowdsourcing projects which ended with consumer backslash. A co-creation competition by Henkel in Germany for example ended with protests against the contest, when participants were unhappy with the jury-chosen winner (Breithut, 2011). A negative co-creation experience can easily lead to the feeling of being exploited and cheated on (Djelassi & Decoopman, 2013). This perceived unfairness and dissatisfaction with the outcome can lead to several unwanted behaviors of users like boycotting, complaining, fraud, and in general a bad reputation of the initiator (Gebauer et al., 2013). Therefore it is essential to keep participants motivated and satisfied with their tasks, outcomes and the overall co-creation experience (Fernandes & Remelhe, 2015). Organizations should be aware that the co-creation experience has an impact on brand attitude and image. Positive feedback on the suggestions and transparent ways to track how the idea will become reality could be features that increase task satisfaction and therefore a positive attitude towards the initiator.

5.3 Limitations

When considering the findings it has to be kept in mind that the sample was generated via self-selection and thereby does not reflect representativeness. Compared to the socio-demographics of the online users in Germany (AGOF e. V., 2016), it becomes clear that this sample was younger and had a higher emphasis on females. Although in experimental research the focus lies more in effects than representativeness, it is unclear if the findings of this study are generalizable to another user group. In addition to that, a higher number of participants could have underlined the results. This is evident when considering that this study was based on a 3x2x2 experiment due to the six stimulus groups and the median-split of the moderator task motivation. Although there was an equal distribution of creative thinking in all experimental groups, the homogeneity regarding age could not be completely guaranteed. Therefore succeeding studies are needed to establish the measured effects.

When designing the stimulus it was consciously decided to show the users' names with their provided ideas only in the rating condition. As described before this was done since theory and pre-testing revealed that the supposed effects of evaluation apprehension are highly linked to the social presence of other individuals (Paulus & Dzindolet, 2008). Therefore ratings and usernames were seen as connected and as a combined contributor to the concept of evaluation apprehension. In order to diminish the evaluation apprehension in the non-rating conditions not only the ratings but also the

usernames were left out in the stimulus. Still, one might argue that this decision might have led to other effects that were captured in this study.

The stimuli were also designed in a more artificial way when compared to co-creation platforms in reality to ensure internal validity. The 'My Starbucks Idea' platform (Starbucks, 2016) for an example consists of more interactive elements and contains more information like idea categories, leaderboards or complete user profiles. In order not to overwhelm participants, a stimulus platform that did not fully reflect reality but was easier to capture was chosen as the stimulus. In future research more realistic stimuli could be used to corroborate the findings of this study with regard to external validity.

5.4 Future research

There is a shortage of research that issues the support of user performance in idea generation (Lou & Toubia, 2015). Most studies in the domain of collaborative innovation focus on the economic perspective and are limited to qualitative research that generates conceptual findings (Fernandes & Remelhe, 2015). In this study a strong emphasis was put on the user experience and an experimental approach was chosen to extend the research on crowdsourcing and co-creation. The aim was to prove what factors contribute to the creative user output when generating ideas on a crowdsourcing platform. It was also found that providing information about the community of the platform can paradoxically lead to positive as well as negative effects. The findings show that an increased task motivation only affects the elaboration of the proposed idea (workability, relevance and specifity), but not the innovativeness of the idea itself (novelty). Here the design of the online platform can be a way to influence how novel ideas are generated by the users. Future research of user performance in online idea generation should therefore incorporate the platform design and the user experience in their studies.

The context of the experiment was determined in order to generate comparable output. In following studies other contexts aside from a fictional café could enrich the results and the field of research. In the café example it was easy to contribute ideas and no additional knowledge was needed to come up with a suggestion, but more challenging creative tasks could reveal different effects. In this study task motivation and creative thinking were revealed to be two important factors that influence idea generation. Background knowledge is regarded as an additional parameter for successful idea creation (Lou & Toubia, 2015). In succeeding studies challenging creative tasks could be analyzed according to the componential theory of individual creativity (Amabile, 1997) that includes all three factors.

The results of the study show that information about the performance of other users can inhibit but also strengthen novel idea output. Providing an acceptable amount of ideas and rating information

may have positive effects on the creative outcome due to social facilitation (Zajonc, 1965). Being under the impression to be evaluated and observed may boost the creative output. Otherwise, without ratings, the impression of not being assessed could create relief and the loss of focus on the task (social loafing). But, when the amount of information available grows too high, information overload and evaluation apprehension could set in, which again decreases the quality of novel output. At a certain amount of given information it would seem better to avoid mutual assessment via ratings to prevent evaluation apprehension. Based on these assumptions the model of social facilitation and social loafing (Aronson et al., 2006) was introduced as an interesting addition for future research. Further studies should involve this model and take into account, that the fear of being assessed can be a critical factor in online idea generation.

With regards to research fields focusing on reputation this study can also serve with valuable insights. There is evidence that the participation in co-creation tasks can foster positive attitudes towards the initiator. Although this study used a fictional example, future research can use existing brands as a stimulus in order to analyze how the attitude towards the brand before participation has an effect on task motivation and how participation can influence this attitude.

Finally it has to be noted that crowdsourcing platforms and co-creation user experiences normally have a longer duration than the one used in this study (Estelles-Arolas & Gonzalez-Ladron-de-Guevara, 2012). They consist of far more dynamic and continuous interactions between users (Fernandes & Remelhe, 2015). Ideas will be adapted due to feedback and interested people spend more time on the platform. Thus it could be desirable to conduct a long-term study of a crowdsourcing project existing in reality to trace the processes of change over time. This can bring insights on how the community affects the user's experience and performance in the long term – especially when getting accustomed to the community and becoming friends with other users.

6 Conclusion

It was shown that the design of the platform as well as task motivation and creative thinking are important factors in idea generating co-creation activities. The quality and especially the relevance and innovativeness of the submissions are affected by the number of the shown ideas and the existence of an evaluation through ratings. Providing information about the co-creation community and its performance can simultaneously have positive as well as negative effects on creative output. It is recommended to use either several ideas with a rating system or many ideas without ratings. Furthermore the shown ideas should be of good quality and also portray a wide array of possible categories.

In summary it can be said that there is a paradoxical interaction based on the social influence on idea generation platforms: The use of rating bars can boost creative performance due to social facilitation, but also decrease creativity due to evaluation apprehension. Too few information can generate design fixation, whereas too much information creates the danger of information overload. So the positive effects a crowdsourcing community may bring to idea generation co-creation activities can easily turn into negative ones. Moreover, the satisfaction with the task outcome is influenced by task motivation and creative thinking and can positively influence the attitude the user has about the initiator.

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Appendix

I. Questionnaire (English version)

Dear participant,

As part of my master thesis at the University of Twente about how to improve co-creation platforms I need your participation in this survey. You will need approximately 10-15 minutes to fill in the whole questionnaire.

Please fill in the survey fully according to your own opinion. There are no correct or wrong answers since I only need your personal opinion. All collected data will be treated anonymously and confidential.

If you have any questions please feel free to contact me: j.b.haag@student.utwente.nl.

Thank you for your support!

Julian Haag

By clicking next I declare that I have been informed in a manner which is clear to me about the nature and method of the research. My questions have been answered to my satisfaction. I agree of my own free will to participate in this research. I reserve the right to withdraw this consent without the need to give any reason and I am aware that I may withdraw from the experiment at any time. If my research results are to be used in scientific publications or made public in any other manner, then they will be made completely anonymous. My personal data will not be disclosed to third parties without my express permission.

Your age in years:

_____

Your gender:

( ) Female

( ) Male

Please read this introduction carefully

'Your Coffee' is a successful American coffeehouse chain similar to Starbucks with more than 300 cafés in the United States. The idea of 'Your Coffee' is to bring the best quality coffee to you the way you want it. Due to its success the brand now wants to expand to Europe and open cafés there. Therefore an online platform was created. Here customers can provide ideas for 'Your Coffee' that are **innovative but also feasible** for the café **to improve customer satisfaction**. Every user who **submits an idea** will get the chance to win a **15 € Amazon voucher**.

On the next page you will see the platform of 'Your Coffee'. After that you will have the opportunity to add your own idea.

Please have a look at the platform. On the next page you will have the opportunity to submit your idea. The 'Next'-button will appear in 15 seconds.

Stimulus (see appendix II)

Stimulus (see appendix II)

Here you can upload your own idea for 'Your Coffee' (please put in only **one** idea)

Title:

Description:

Please take some time to explain your idea in detail. The more detailed you describe the idea the easier it is for us to implement it. Thank you for your help!

(In the online survey all items in each question block were ordered randomly)

Please indicate how you would assess **the task of finding an idea** for 'Your Coffee'?

Frustrating	( )	( )	( )	( )	( )	( )	( )	Gratifying
Boring	( )	( )	( )	( )	( )	( )	( )	Interesting
Pleasant	( )	( )	( )	( )	( )	( )	( )	Unpleasant
Nice	( )	( )	( )	( )	( )	( )	( )	Awful
Pleasing	( )	( )	( )	( )	( )	( )	( )	Annoying

Why did you put efforts or no efforts into finding an idea for 'Your Coffee'? Please indicate how much you agree or disagree with these statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat disagree	Agree	Strongly agree
Because there is a change I will be rewarded with the voucher	( )	( )	( )	( )	( )	( )	( )
Because the task was interesting	( )	( )	( )	( )	( )	( )	( )
Because the task was exciting	( )	( )	( )	( )	( )	( )	( )
I did little because I didn't think this task is worth putting efforts into	( )	( )	( )	( )	( )	( )	( )

Please indicate how much you agree or disagree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat disagree	Agree	Strongly agree
I feel that I am good at generating novel ideas	( )	( )	( )	( )	( )	( )	( )
I have confidence in my ability to solve problems creatively	( )	( )	( )	( )	( )	( )	( )
I have a knack for developing the ideas of others further	( )	( )	( )	( )	( )	( )	( )
I am good at finding creative ways to solve problems	( )	( )	( )	( )	( )	( )	( )

Please indicate how much you agree or disagree with the following statements about the 'Your Coffee' company.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat disagree	Agree	Strongly agree
I would describe 'Your Coffee' as an innovative company	( )	( )	( )	( )	( )	( )	( )
I think 'Your Coffee' is an open-minded company	( )	( )	( )	( )	( )	( )	( )
'Your Coffee' makes creative decisions	( )	( )	( )	( )	( )	( )	( )
I would like to visit a 'Your Coffee' café	( )	( )	( )	( )	( )	( )	( )
'Your Coffee' cares about its customers.	( )	( )	( )	( )	( )	( )	( )
I find 'Your Coffee' very likable	( )	( )	( )	( )	( )	( )	( )

How many ideas of other users were shown on the 'Your Coffee' platform?

( ) One idea

( ) Six Ideas

( ) 21 ideas

Were you able to see ratings for each idea (thumbs up/thumbs down) on the 'Your Coffee' platform?

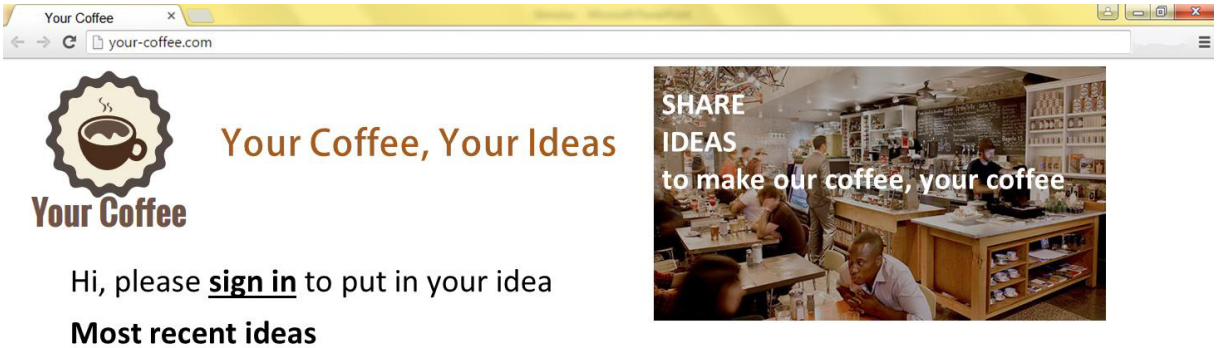
( ) Yes

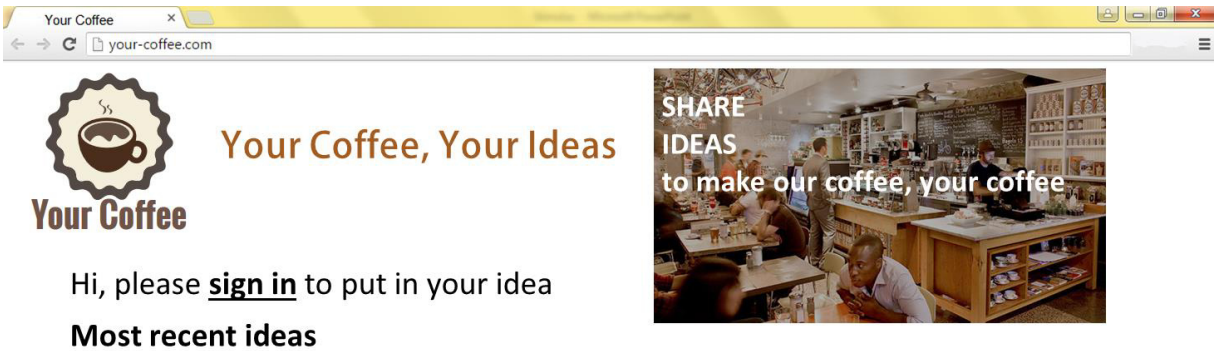
( ) No

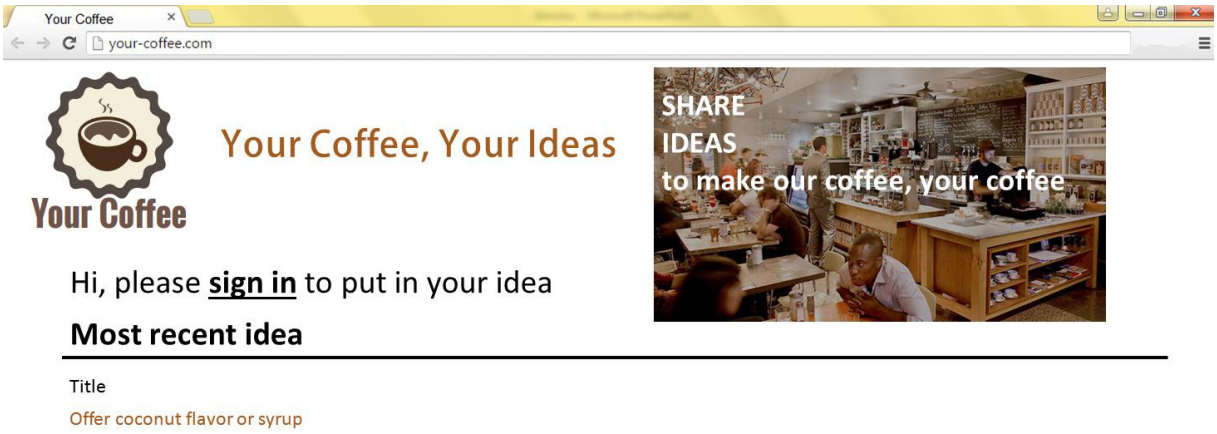
Please fill in your email address if you want to have a chance of winning a 15€ Amazon voucher. If you are not interested in a voucher just click on ‘continue’.

Thank you for your participation!

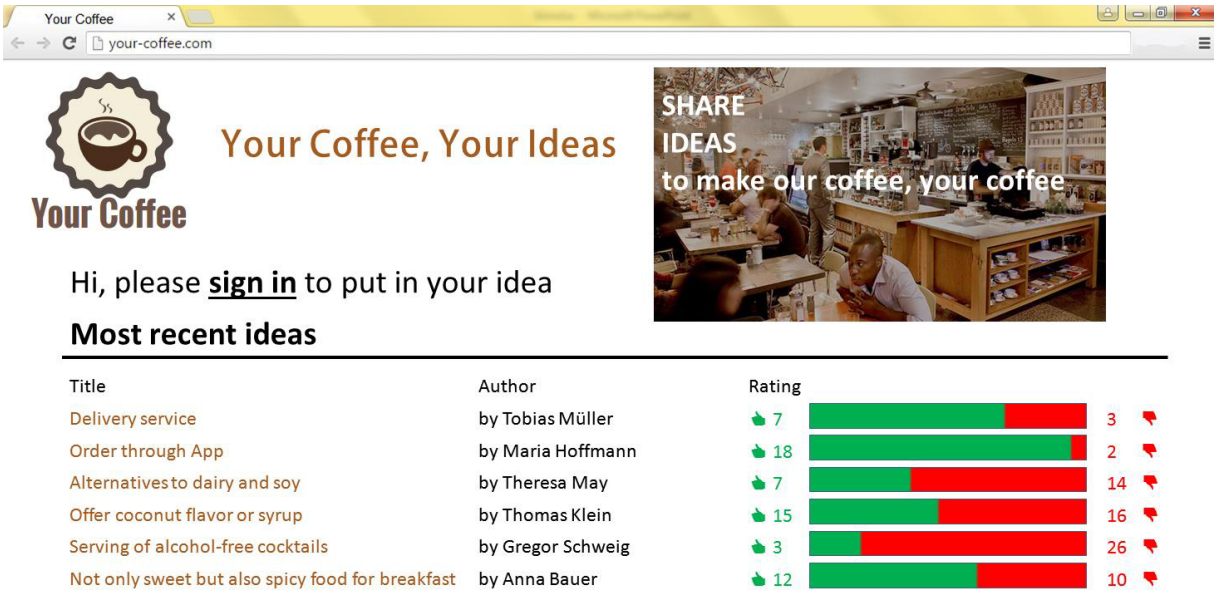
II. Stimuli (English version)

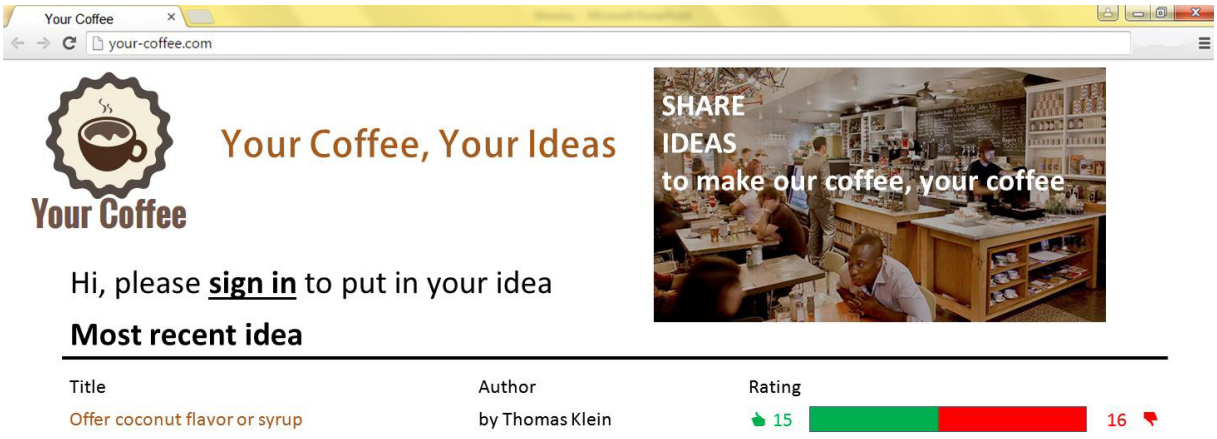






Title	Author	Rating
Delivery service	by Tobias Müller	7 3
Order through App	by Maria Hoffmann	18 2
Alternatives to dairy and soy	by Theresa May	7 14
Offer coconut flavor or syrup	by Thomas Klein	15 16
Serving of alcohol-free cocktails	by Gregor Schweig	3 26
Not only sweet but also spicy food for breakfast	by Anna Bauer	12 10
Green Tea Lemonade	by Katharina Schneider	16 12
Selling food half price before throwing it away	by Dennis Bötcher	21 2
Use local bakeries for food choices	by Maximilian Schuster	42 5
Add smoothies to drinks	by Carl Bäcker	30 5
Introduce reward customer card	by Dana Pfeiffenkopf	41 1
More sugar free choices for diabetics	by Astrid Berger	36 38
Stevia sugar	by Cora Maier	4 33
Giving props and feedback to barista via app	by Nadine Graf	22 2
Provide Lactose Free Milk	by Patrick Vogt	7 4
Special Mugs for each city	by Axel Schuster	70 10
Invite local music artists to play	by Nathalie Schulz	3 15
Sell Brand Merchandise (T Shirts, Poster, etc.)	by Sven Schiffer	4 84
Couch outside of café	by Marko Kirschdorf	16 2
Offer student and senior discount	by Dana Strauß	62 43
Make all your products ORGANIC!!!	by Mia Herzog	54 56


Your Coffee
your-coffee.com
Your Coffee
Your Coffee, Your Ideas
SHARE
IDEAS
to make our coffee, your coffee
Hi, please sign in to put in your idea
Most recent ideas
Title
Author
Rating
Delivery service
by Tobias Müller
7
3
Order through App
by Maria Hoffmann
18
2
Alternatives to dairy and soy
by Theresa May
7
14
Offer coconut flavor or syrup
by Thomas Klein
15
16
Serving of alcohol-free cocktails
by Gregor Schweig
3
26
Not only sweet but also spicy food for breakfast
by Anna Bauer
12
10


Your Coffee
your-coffee.com
Your Coffee
Your Coffee, Your Ideas
SHARE
IDEAS
to make our coffee, your coffee
Hi, please sign in to put in your idea
Most recent idea
Title
Author
Rating
Offer coconut flavor or syrup
by Thomas Klein
15
16

III. Code Book Content Analysis (English version)

Originality: The degree to which the idea is not only rare but is also ingenious, imaginative, or surprising		
Score	Description	Example for a restaurant that loses too many customers
4	Not expressed before (rare, unusual) AND Ingenious, imaginative or surprising; may be humorous	Buy other surrounding restaurants have someone feed you the food while relaxing in a lawn chair by the pool play music that psychologically makes people hungry or thirsty
3	Unusual, interesting, shows some imagination	Have a roller derby night Have individuals on campus passing out flyers and telling people about it, maybe have him/her wear something flashy
2	Interesting	Use more spices, herbs and fresh ingredients to improve taste Entertainment that ranges from jazz to blues
1	Common, mundane, boring	All-u-can eat salad bar for a nominal fee with the purchase of an entrée

Paradigm relatedness: The degree to which an idea preserves or modifies a paradigm		
Score	Description	Example for a restaurant that loses too many customers
4	Paradigm breaking: Introduces new elements and changes the relationship to the customer. Introducing more radical ideas that are also unusual for in this case a café	Spread nasty rumors about the other restaurants in the area Put roaches in other restaurants' kitchens and make sure customers find them
3	Paradigm stretching: Changes the relationship with the customers (i.e. giving them something other than drinks and food, like a special day/theme party)	Have a roller derby night Put a full-court basketball facility in the back
2	Slightly paradigm stretching: Introduces new elements (e.g. different food, different opening hours, different ways of advertising, etc.) but still main focus on the main purpose (here: serving coffee)	Use more spices, herbs, and fresh ingredients to improve taste Stay open late during finals and offer cheap coffee
1	Paradigm preserving: No changes; Main purpose is preserved (here: serving coffee)	Head out flyers on campus

Acceptability: The degree to which the ideas is socially, legally, or political acceptable		
Score	Description	Example for a restaurant that loses too many customers
4	Common strategies that violate no norms or sensibilities	Hand out flyers on campus Offer healthy menu
3	Somewhat uncommon or unusual strategies that don't offend sensibilities	Offer cool stories or jokes on the menu so it can be read while waiting Telephones at each table, so you can talk from table to table
2	Offends sensibilities somewhat but not totally unacceptable	Have crazy events through the night such as times when the bar tenders stand on the bar with a bottle of booze and walk down pouring it into different mouths Allow patrons to dance on the tables
1	Radically violates laws or sensibilities or totally unacceptable business practice	Put some addictive substance in the food and milk the students for everything they have Use the same grease for the next month to cook fries, chicken nuggets, and other health foods

Implementability: The degree to which the idea can be easily implemented		
Score	Description	Example for a restaurant that loses too many customers
4	Easy to implement at low cost or non-radical changes	Have different varieties of music on certain nights Sometimes have people selling your food on the mall or sponsoring stuff around campus
3	Some changes or reasonably feasible promotions or events	Have a grand re-opening with a radio station, with free food, prizes and contests. Make sure there is lots of advertising in and around the university in conjunction with the community Make the restaurant honor all-aboard cards and make it so the students receive an extra 10% off food purchases if they use all aboard
2	Significant change or expensive or difficult but not totally impossible to implement	Remodel the restaurant in an up to date style Pay beautiful people to eat there so others will want to as well
1	Totally infeasible to implement or extremely financially nonviable	Free lunch on every Friday of the week Convince the professors to give the students extra credit for going to the restaurant

Applicability: The degree to which the idea clearly applies to the stated problem		
Score	Description	Example for a restaurant that loses too many customers
4	Solves an identified problem that is directly related to the stated problem (do X to get Y, and Y is part of the stated problem)	Hire both English and Spanish speaking employees for a broader base for customers Work with restaurant around you in order to jointly draw more customers to your area
3	Solves an implied problem that is related to the stated problem (do X to get an implied Y, which applies to the stated problem)	Free lunch on every Friday of the week Increase variety of the drinks menu
2	May have some benefit within a special situation and somehow relates to the stated problem (do X, which somehow relates to the stated problem)	Have an attendant in the bathroom to help with cologne and mouthwash Have the Christmas colored mints form December to January
1	Intervention is not stated or does not produce a useful outcome (no X) or (do X for useless Y)	Put the restaurant in a bad location and car theft will free up parking space Lobby congress for lower taxes to provide cheaper food

Effectiveness: The degree to which the idea will solve the problem		
Score	Description	Example for a restaurant that loses too many customers
4	Reasonable and will solve the stated problem without regard for workability (if you could do it, it would solve the main problem)	Buy out other surrounding restaurants so people will stay at your place Put some addictive substance in the food and milk the students for everything they have
3	Reasonable and will contribute to the solution of the problem (it helps but it is only a partial solution)	Provide birthday specials. Perhaps a free meal for the birthday person Use more spices, herbs and fresh ingredients to improve taste
2	Unreasonable or unlikely to solve the problem (It probably will not work)	Have crazy events throughout the night such as times when the bar tenders stand on the bar with a bottle of booze and walk down pouring it into different mouths Put a full court basketball facility in the back
1	Solves an unrelated problem (It would not work, even if you could do it	Have employees that can speak English Free fighting Don't put the sign up 'Ketchup upon request'

Completeness: The number of independent subcomponents into which the idea can be decomposed, and the breadth of coverage with regard to who, what, where, when, why, and how		
Score	Description	Example for a restaurant that loses too many customers
3	Comprehensive with three or more parts at least two of the 5 Ws + H (who, why, when, where, how), e.g. (what + when + where) or (what + what + why)	Advertise that slow is better – results in more care taken and fresh food used Owner should ask people on campus what they have heard about the restaurant and improve on criticism
2	Contains two parts from different dimension (5 Ws + H), such as but not limited to (what + where), (what + why), (what + how) or three or more parts of only one of the 5 Ws + H (e.g. what + what + what)	Hand out flyers on campus Free lunch on every Friday of the week
1	Contains one or two parts from the same dimension and usually the what (e.g. (what) or (what + what)	Create a breakfast menu Provide free parking

Implicational explicitness: The degree to which there is a clear relationship between the recommended action and the expected outcome		
Score	Description	Example for a restaurant that loses too many customers
3	Implication is clearly stated and makes sense (do X so that Y)	Fix up the place to attract more people, people don't like to go someplace that looks bad Decorate the place colorfully so it stands out from the rest so it catches the viewers' eyes as they drive by
2	Implication is not generally accepted or is vaguely stated (do X, which solves a not-generally-accepted Y) or (do X which solves a vaguely stated Y)	Have a frequent meal plan where the more you come in the more free food you get Advertise in an inventive way that will bring in better people
1	Implication is not stated, even though relevant (do X without a stated Y)	Entertainment that ranges from jazz to blues Add a buffet