

**The Customer is Always Right**  
**Managers' Pro-Customer Bias in Open Innovation**

DISSERTATION  
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St.Gallen, October 25, 2019

The President:

Prof. Dr. Thomas Bieger

*In deep gratitude.*  
*For my beloved grandmother Anastasia.*

## Vorwort

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**List of Abbreviations**

Amazon Mturk	Amazon Mechanical Turk
ANOVA	Analysis of Variance
B2B	Business-to-Business
B2C	Business-to-Consumers
CDI-Index	Competence to create desirable ideas
CFI-Index	Competence to create feasible ideas
CLT	Construal Level Theory
COI-Index	Competence to create original ideas
$e^B$	odds ratio
eds.	Editors
e.g.,	exempli gratia
et al.	et alia
$H_n$	Hypothesis No n
M	Mean
min	Minimum
max	Maximum
n	Sample size
NPD	New Product Development
p	Statistical significance
Observed Prop.	Observed Proportion
p.	Page
(R)	Reverse item
$R^2$	R-squared
R&D	Research & Development
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
t	t-value
Test Prop.	Test Proportion
US/USA	United States of America
$\chi^2$	Chi-Square



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## Executive Summary

The present research studies to what extent managers prefer customers over employees as idea providers when it comes to the development of new products and, in particular, how respective attitudes of managers affect their selection of ideas in open innovation contexts.

The results of six quantitative and one qualitative study with a total number of 875 top and lower-level managers across different industries suggest the following: Firstly, managers' overall evaluation of innovation ideas is highly dependent on the estimation of the desirability of a product idea. Secondly, managers assume customers to have higher competencies regarding the creation of respective desirable as well as original ideas, whereas employees are considered to be more adept at inventing feasible ideas. Thirdly, although prior research found strong biases against ideas from the outside, the present empirical studies reveal the opposite phenomenon that managers prefer customers' over employees' ideas within the pre-selection and selection process, emphasizing a *pro-customer bias* of managers.

Obviously, such a managerial *pro-customer bias* will have a downside, as it leads to a lower appreciation of employees' ideas, and hence, it can harm employees' motivation to contribute to such initiatives. A separate qualitative study with 23 participating executives uncovers possible measures of top and lower-level management to foster employees' innovation capabilities and the recognition of internal ideas for new product innovation.

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## **Zusammenfassung**

Die vorliegende Dissertation untersucht, inwieweit Manager im Rahmen der Entwicklung neuer Produkte Kunden im Vergleich zu Mitarbeitenden als Ideengeber bevorzugen und inwieweit diese Einstellung die Auswahl von Iden in Open Innovation Kontexten beeinflusst.

Die Ergebnisse von sechs quantitativen und einer qualitativen Studie mit insgesamt 875 Führungskräften aus dem Top und mittleren Management zeigen, dass die allgemeine Gesamtbewertung vorgeschlagener Ideen stark von der erwarteten Begehrtheit der vorgestellten Produktidee abhängt. Zudem weisen die Ergebnisse auf, dass Manager, Kunden höhere Fähigkeiten in der Entwicklung solcher begehrten sowie auch originellerer Ideen zuschreiben, während Mitarbeitende als kompetentere Ressource für die Entwicklung umsetzbarer Ideen wahrgenommen werden. Während die vorherige Forschung eine starke Ablehnung externer Ideen aufzeigen konnte, implizieren die aktuellen Forschungsergebnisse das Gegenteil nämlich, dass Manager externe Ideen von Kunden gegenüber internen Ideen in der Auswahl für die weitere Produktentwicklung bevorzugen.

Eine starke Befürwortung von Kundenideen kann negative Konsequenzen für die Wertschätzung interner Ideen haben und die Motivation der Mitarbeitenden zur Einreichung innovativer Ideen im Unternehmen hemmen. Eine im Rahmen dieser Arbeit durchgeführte qualitative Studie mit 23 Führungskräften zeigt daher mögliche Massnahmen für das Top und mittlere Managements auf, welche die Innovationskraft der Mitarbeitenden sowie die Anerkennung interner Ideen im Unternehmen stärken können.

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## 1 Introduction

### 1.1 Problem Statement & Relevance

With the rise of digitization and increased interaction possibilities, the rapid growth of open innovation activities can be recognized (Fuchs & Schreier, 2011; Kristensson, Matthing, & Johansson, 2008; Stevens, Esmark, Noble, & Lee, 2017). Today, a majority of companies collaborate with internal and external stakeholders to gather feedback or to generate new ideas and business models within shorter innovation cycles and at lower innovation costs (e.g., Fuchs, Prandelli, & Schreier, 2010; Fuchs & Schreier, 2011; Gassmann & Enkel, 2004). For example, in so-called co-innovation projects, SAP invites business customers to develop new software solutions in a long-term collaboration setting with meetings and workshops regularly (Cui & Wu, 2016; SAP, 2019). In the business-to-consumer market, Procter and Gamble (P&G) enables customers on its innovation platform *P&G connect + develop* to develop new ideas for specific product categories or the whole portfolio of Procter & Gamble (Procter & Gamble, 2019). Besides such company-specific programs, crowdsourcing platforms like *atizo* (Switzerland) or *kickstarter* (US, international) have become very popular for hosting individual and corporate projects and have attracted much attention among academic scholars (Brabham, 2013; Djelassi & Decoopman, 2013).

While there has been fruitful research on the design and success factors of open innovation activities (Kristensson, Matthing, & Johansson, 2008, Durst & Stähle, 2013, Cui & Wu, 2016) as well as customers' attitudes and behaviors within such initiatives (e.g., Chan, Yim, & Lam, 2010; Hofstetter, Aryobsei, & Herrmann, 2018; Mahr, Lievens, & Blazevic, 2014; Stevens, Esmark, Noble, & Lee, 2017), investigations on how responsible managers evaluate and select ideas have been comparatively scarce, despite being equally relevant. In fact, when it comes to the selection and the recognition ideas within innovation processes, managers' individual decision-making behavior has a significant impact on the outcome (Lu et al., 2019; Piezunka & Dahlander, 2015; Mueller, Waslak, & Krishnan., 2014; Wiesenfeld, Reyt, Brockner, & Trope, 2017). The present research addresses this research gap by investigating executives' evaluation and selection behavior in open innovation. More specifically, this research aims to uncover to what extent the information on the source

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of an innovation idea impacts its assessment and consideration in new product development.

As previous empirical research revealed, managerial decision-making is influenced by executives' traits as well as situational conditions (Dane & Pratt, 2007; Gino, Brooks, & Schweizer, 2012; Johnson & Johnson, 2017; Soll & Mannes, 2011; Tost, Gino, & Larrick, 2012). In this context, the consideration of input or knowledge depends primarily on the individual evaluation of the origin (e.g., Dalal & Bonaccio, 2010; Lu et al., 2019; Homfeldt, Rese, & Simon, 2019; Tenney, MacCoun, Spellmann, & Hastie, 2007; Yaniv & Kleinberger, 2000). Previous studies on R&D processes have found an avoidance of external knowledge in innovation settings, also known as the *not invented here syndrome* (for a review see Antons & Piller, 2015; Katz & Allen, 1980; 1982). However, today's open innovation initiatives aim explicitly to strive for external input (Laursen & Salter, 2006; Dahlander & Gann, 2010). Based on construal level and reason-based choice theory, the present research provides theoretical and empirical evidence in favor of the opposite phenomenon, namely that managers prefer external (customers') over internal (employees') ideas, resulting in a *pro-customer bias* of managers in open innovation.

Six studies with a total number of 875 managers were conducted to investigate the theorized *pro-customer bias* of managers on an attitudinal and behavioral level. In conclusion, the present research showed that managers are inclined to prefer customers' ideas over employees' ideas when it comes to the pre-selection and selection of ideas within the new product development, providing strong empirical evidence for a *pro-customer bias* of managers.

The academic contribution of this research is threefold: Firstly, the present findings extend existing research on the evaluation and selection of ideas within innovation processes, showing that the assessed desirability of an idea is the strongest predictor of its overall evaluation from a managerial point of view. Secondly, this work broadens current studies on construal level theory, and in particular, on the impact of psychological distance on the decision-making behavior in a management sample. Thirdly, this research provides initial evidence on managers' *pro-customer bias* in new product development, therefore contributing to emerging management and organizational behavior literature in the context of open innovation.

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For practitioners, the present research uncovers possible negative consequences of open innovation on the recognition and appreciation of internal ideas from employees. Furthermore, the present research identifies relevant management measures to counteract identified biases of managers and foster internal innovation on an individual and organizational level.

## 1.2 Dissertation Outline

The present dissertation is structured in eleven chapters (see Figure 1 for a visualization of the dissertations' structure). After this introduction, which has highlighted the relevance and the main contributions of the present research, chapter two gives an overview of the theoretical background on today's practices in open innovation as well as existing studies on managerial decision-making in innovation contexts. Based on this theoretical background, a set of hypotheses regarding the general determinants of managers' overall evaluation of innovation ideas within new product development is derived. Subsequently, chapter three describes the conducted empirical study 1 in detail, which investigates managers' decision-making within the idea assessment.

Based on the results of study 1 and further research, chapter four introduces the theoretical concept of the *pro-customer bias* and respective hypotheses for the remaining empirical studies. In chapter five, the procedure, participants, and main results of empirical study 2a are presented, which focuses on managers' relative perception of customers' and employees' ideation competencies. In line with the theorized hypotheses, the following chapter six gives an overview of empirical study 2b, replication, and revalidating the previous results of study 2a.

Given the results on managers' attitudes towards customers' and employees' ideation competencies, study 3a reveals empirical evidence on managers' general preference for customers over employees as idea providers. Based on a pre-selection scenario in which managers solely decide from whom they would like to see product innovation ideas, with no information regarding the ideas' contents, study 3a uncovers initial evidence on the behavioral outcomes of the pro-customer bias of executives in open innovation. Subsequently, study 3b generates further insights on managers' pre-selection behavior, consistent with the findings of study 3a and this research

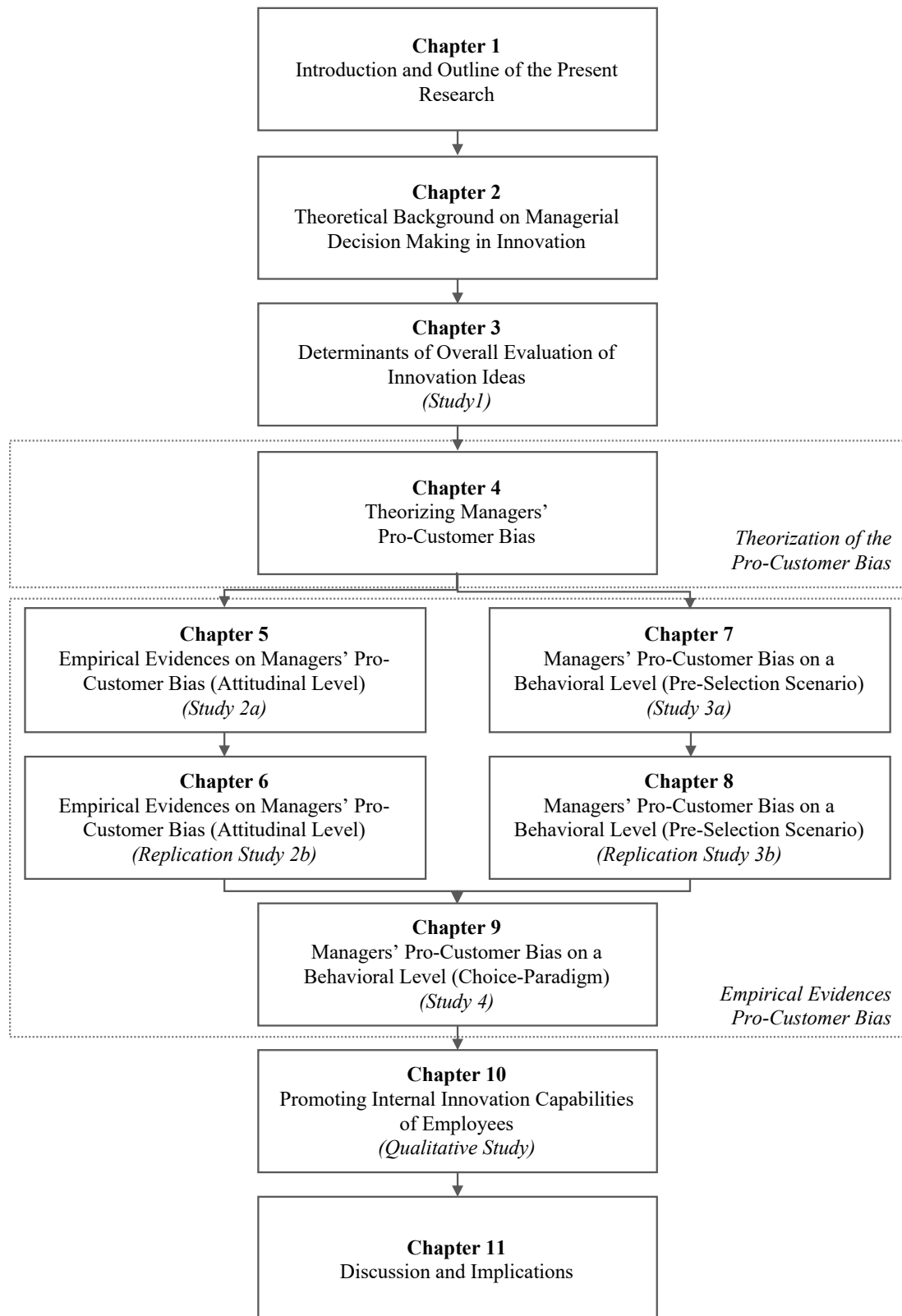


Figure 1. Overview of the Present Research.

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hypotheses. Summaries of the studies' procedures and main results are provided in chapter seven and chapter eight.

In studies 3a and 3b, managers were exposed to a pre-selection scenario, in which they had to choose between ideas from customers and employees, without any information regarding the ideas' real nature. However, in a realistic innovation process, managers need to evaluate concrete idea proposals from different idea providers. Therefore, in study 4 participants were asked to choose one out of two elaborated idea proposals from either a customer or an employee, as outlined in chapter nine.

The empirical findings indicate a downside of customer integration in innovation processes since the sponsorship of customers' ideas leads to a lower appreciation of internal ideas. In order to generate insights on how to mitigate the identified *pro-customer bias*, a qualitative study was conducted. In chapter ten, the study's methodological approach, and the main findings are characterized. The general findings of the present research, its theoretical and practical contributions as well as an outlook of methodological limitations and resulting future studies are described in chapter eleven. Followingly, Table 1 gives an overview of the studies' main results.

### 1.3 Overview of Study Results

Table 1. *Overview of Empirical Studies*

Study	Subjects	Methodological Approach
Empirical study 1	109 Sales and marketing managers	<ul style="list-style-type: none"> <li>- Managers' overall evaluation of innovation ideas is based on the creativity, feasibility, and desirability rating of innovation ideas within new product development.</li> <li>- The estimated desirability of a product idea is the strongest predictor for managers' overall evaluation of ideas.</li> </ul>
Empirical study 2a	149 Managers from a paid online panel	<ul style="list-style-type: none"> <li>- Managers believe that customers provide more original ideas than employees (<i>COI-Index</i>).</li> <li>- Managers believe that employees create more feasible ideas than customers (<i>CFI-Index</i>).</li> <li>- From a management perspective, customers have stronger competencies than employees when it comes to the ideation of desirable ideas (<i>CDI-Index</i>).</li> </ul>
Empirical study 2b	100 Sales and marketing managers	<ul style="list-style-type: none"> <li>- Replication of study 2a regarding managers' attitudes towards customers and employees' idea provider competencies:</li> <li>- Managers evaluate customers as more competent to provide original ideas (<i>COI-Index</i>), whereas employees are estimated to provide more feasible ideas. (<i>CFI-Index</i>)</li> <li>- Managers believe that customers are more adept than employees in the creation of desirable ideas (<i>CDI-Index</i>)</li> </ul>
Empirical study 3a	134 Managers from a paid online panel	<ul style="list-style-type: none"> <li>- Managers prefer customers over employees as ideas providers when it comes to the pre-selection of ideas in innovation contexts (<i>pro-customer bias</i>)</li> <li>- Managers <i>CDI-Index</i> predicts their pre-selection behavior.</li> </ul>



Table 1. *Overview of Empirical Studies*

Empirical study 3b	148 Sales and marketing managers	<ul style="list-style-type: none"> <li>- Replication of findings of empirical study 3a for the prediction of pre-selection of ideas.</li> <li>- Managers show a strong preference for customers' ideas when pre-selecting ideas in innovation processes.</li> <li>- Managers' <i>CDI-Index</i> (representing their belief that customers, in comparison to employees, are more competent to provide desirable ideas) predict their pre-selection behavior.</li> </ul>
Empirical study 4	212 Sales and marketing managers	<ul style="list-style-type: none"> <li>- Managers' show a strong preference for customers' over employees' ideas within the pre-selection of new product ideas, as previously revealed in empirical studies 3a and 3b.</li> <li>- Within their choice of concrete idea proposals, managers show a significant tendency to prefer ideas from customers, even if these are identical to the ideas from the company's employees.</li> <li>- Managers' belief that customers provide relatively more desirable ideas predicts the pre-selection and choice-behavior of managers significantly.</li> </ul>
Qualitative study	23 Sales and marketing managers	<ul style="list-style-type: none"> <li>- The qualitative study reveals insights on how top and lower-level managers can promote internal innovation capacities and hence, mitigate the identified <i>pro-customer bias</i> by enabling a stronger recognition of employees' efforts in innovation processes.</li> </ul>

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## 2 Theoretical Background

In this chapter, the theoretical foundations of the present research on open innovation are summarized as a basis for the later introduction of managers' *pro-customer bias*. Firstly, an overview of recent literature and empirical evidence with a focus on today's open innovation initiatives is given. Secondly, the relevance of managerial decision making for the success of open innovation activities as well as current insights on evaluations and selections of ideas from a managerial point of view are outlined.

### 2.1 Today's Open Innovation Initiatives

Innovation is argued to be a key driver of companies' success (e.g., Accenture, 2016; Ngo & O'Cass, 2013; Rhaïem & Amara, 2019; Slater, Mahr, & Sengupta, 2014). In order to keep up with dynamic and challenging market conditions, a vast majority of today's companies integrate various stakeholders within or outside the organization to generate new or optimize existing business models (e.g., Chesbrough, 2003; Dahlander and Gann, 2010; Djelassi & Decoopman, 2013; Fuchs, Prandelli & Schreier, 2010; Fuchs, Schreier & van Osselaer, 2015; Naqshibandi, Tabche, & Choudhary, 2019; Stevens et al., 2017; Wang, Nickerson, & Sakamoto, 2018). Coming from the notion that an isolation of innovation efforts weakens the internal innovation capabilities over time (e.g., Katz & Allen, 1982; Dahlander & Gann, 2010), the search and transfer of external knowledge in innovation processes and hence, an opening of previously closed R&D processes are argued to impact firm's performance positively (Chesbrough, 2003; Laursen & Salter, 2006, Dahlander & Gann, 2010). In defining the opening of innovation, Chesbrough & Bogers (2014) suggest

“open innovation as a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model. These flows of knowledge may involve knowledge inflows to the focal organization (leveraging external knowledge sources through internal processes), knowledge outflows from a focal organization (leveraging internal knowledge through external commercialization processes) or both (coupling external knowledge sources and commercialization activities) [...]. In this

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definition, innovation refers to the development and commercialization of new or improved products, processes or services, while the openness aspect is represented by the knowledge flows across the permeable organizational boundary” (Chesbrough, 2014, p. 12).

Advances in digital technologies, and accompanying this, increased possibilities of customer-firm interactions, result in a rapid growth of open innovation activities and particularly crowdsourcing as a user-driven form of open innovation (Chesbrough, 2003; Chesbrough & Bogers, 2014; Gassmann, Enkel, & Chesbrough, 2010; Howe, 2006; Merz, 2018; Schemmann, Herrmann, Chappin, & Heimeriks, 2016; Weinberg, Ko de Ryter, Buck, & Keeling, 2013). In recent years, crowdsourcing has become very popular in the Business-to-Consumer (B2C) environment, enabling companies to interact with their customers to generate insights on their needs and respective desirable solutions (Chanal & Caron-Fasan, 2010; Wang, Nickerson, & Sakamoto, 2018).

In crowdsourcing projects, the degree of customer integration can vary from relatively low participation to higher degrees of collaboration (e.g., Chang & Taylor, 2016). Many crowdsourcing projects aim solely to collect a large and diverse pool of innovative ideas of external origin, as employed by Cisco or P&G as prominent examples. In this context, on P&G's innovation platform, *connect+develop* customers are invited to provide innovation ideas for specific product categories (Procter & Gamble, 2019). The review and selection of ideas are performed by the company's management so that the degree of participation and interaction with the company is relatively low. Higher degrees of customer integration in the innovation processes are achieved by integrating the crowd in the evaluation and selection process. For instance, on the LEGO crowdsourcing platform, *LEGO IDEAS* customers can develop new LEGO products and also vote for the provided ideas from other users (LEGO Group, 2019). The most promising ideas from a LEGO perspective, with over 10.000 votes at minimum, are screened by the management in light of their commercialization potential (LEGO Group, 2019). In contrast to the LEGO example, in which the management takes the final decision for the idea's realization, in McDonald's *My Burger* initiatives in Germany and UK (McDonald's, 2014), the crowds' opinion had a direct impact on the actual product outcome, since the five most preferred burgers were produced and sold in all national McDonald's restaurants (McDonald's, 2014).

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The examples illustrate that within open innovation, customers are no longer the target of a company's value proposition by only consuming its products and services, but they instead become a valuable source of feedback, new product, and service ideas as well as the assessment of market potential for companies (e.g., Chang & Taylor, 2016; Chesbrough, 2006; Velamuri, Schneckenberg, Haller, & Moeslein, 2017).

Within open innovation, customers can express their needs and interests by proposing their idea proposals, which can be incorporated directly into the product and service development of a company (Fuchs, Prandelli, & Schreier, 2010; Kristensson, Matthing, & Johannsson, 2008). From this perspective, open innovation projects have the potential to reveal relevant market information for companies and question traditional market studies as well as the integrated function of marketing managers, as the following example illustrates: based on this notion that customers' proposals and votes reflect individual tastes and desires, Danone since 2006 has engaged customers in their crowdsourcing initiative "on vote tous pour Danette" to vote on new flavors of its cream dessert "Danette" (Danone, 2017). As a result, the products selected by customers have had the highest turn-over and have stayed in shops the longest, year by year (see also Djelassi & Decoopman, 2013). Further research supports the profitability claim of open innovation initiatives in comparison to traditional market research (Lilien et al., 2002; Wittel, Kristensson, Gustafsson, & Löfgren, 2011). In this context, the outsourcing of functions to external stakeholders within open innovation initiatives, such as crowdsourcing, cannot be considered as simple marketing tools, because they instead affect the entire business model (Djelassi & Decoopman, 2013; Howe, 2006). Especially, engaging customers together with employees in long-term oriented communities, as e.g., on the innovation platform of the swiss national railway company SBB (SBB, 2019; Troll & Blohm, 2017), leads to a transition of the customer's role from an external contributor to a temporary member of the organization (Michel, Brown, & Gallan, 2008; Schemmann, Herrmann, Chappin, & Heimeriks, 2016).

Existing studies on the impact of open innovation and the performance of created products or services show inconsistent findings: previous studies revealed the timing and degree of external contribution, the intensity and mode of customer-firm interaction as well as companies' abilities to incorporate external knowledge to be influencing the relationship between open innovation and firm performance (e.g.,

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Chan, Yim, & Lam, 2010; Cui & Wu, 2016; Fuchs, Prandelli & Schreier, 2010; Gassmann, Kausch, & Enkel, 2010; Mahr, Lievens, & Blazevic, 2014; Ngo & O’Cass, 2013). Coming from the idea of opening R&D processes, open innovation literature argues that external knowledge facilitates the generation of a large number of ideas, resulting in an increase of companies’ innovation capability and performance (Piezunka & Dahlander, 2015; Kornish & Ulrich, 2011; Schemmann, Herrmann, Chappin, & Heimeriks, 2016, Ulrich & Eppinger, 2008; Wang, Nickerson, & Sakamoto, 2018). In this line, a study from Chang & Taylor (2016) found customer integration within idea generation processes to improve new product’s financial performance in general – both directly and indirectly through the acceleration of its time to market (Chang & Taylor, 2016). However, comparing highly and less innovative companies (concerning the number of new products, year by year), the proficiency level of the “Idea Genesis” was not found to be significantly higher in companies that were considered to be very innovative (Koen et al., 2001). In contrast, firms’ competencies regarding the selection of ideas seem to differ between those companies (Koen et al., 2001), leading to the assumption that the recognition and selection of ideas within open innovation is a significant bottleneck for companies’ innovativeness (Criscuolo, Dahlander, Grohsjean, & Salter, 2019; Eling, Griffin, & Langerak, 2016; Koen et al., 2001).

Recent research indicates that especially the evaluation and selection of ideas within early innovation stages determines the success of innovation outcomes (e.g., Cooper & Kleinschmidt, 1993; Fischer & Rohde, 2013; Hofstetter, Aryobsei, & Herrmann, 2018; Koen et al., 2001; Schemmann, Herrmann, Chappin, & Heimeriks, 2016; Terwiesch & Ulrich, 2009). Early innovation phases, often called “Fuzzy Front Ends”, start with an identification of relevant market opportunities for innovations, as a basis for idea creation. At the end of this stage, promising concepts are selected for further development (e.g., Gassmann, Kausch, & Enkel, 2010; Kim & Wilemon, 2002; Koen et al., 2001; Velamuri, Schneckenberg, Haller, & Moeslein, 2017). Within such a selection process, managers need to evaluate and choose the most promising ideas to allocate resources for the development of marketable business solutions (Kim & Wilemon, 2002; Martinsuo & Poskela, 2011; Velamuri, Schneckenberg, Haller, & Moeslein, 2017). Hence, understanding managerial decision-making within the evaluation and selection at early stages is highly relevant for outcomes of open innovation initiatives.

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Today's management-oriented literature on the evaluation and selection of ideas within open innovation concentrates on three aspects: a large number of investigations focuses on the examination of organizational processes to structure and control the selection of ideas, such as the application of *Stage-Gate* models (Cooper, 2008; Criscuolo, Dahlander Grohsjean, & Salter, 2019; Eling, Griffin, & Langerak, 2016; Koen et al., 2001, Sethi & Iqbal, 2008). Further research concentrates on the composition of the panel of selectors and the impact of its characteristics on the innovation outcome (e.g., Criscuolo, Dahlander, Grohsjean, & Salter, 2017). Another stream of research studies the design of evaluation criteria to optimize the selection process and enhance the innovation capabilities of companies (e.g., Kock, Heising, & Gemünden, 2015; Martinsuo & Poskela, 2011). However, little research investigates the individual decision-making process of managers and several underlying psychological mechanisms and biases within the assessment of ideas in open innovation. The present research addresses this research gap by focusing on managers' individual decision-making behavior. More precisely, this research provides initial theoretical and empirical evidence for the consequences of open innovation on managers' assessment and selection of internal and external innovation ideas for product development, revealing a strong preference for external ideas, regardless of the ideas' content. The next paragraph outlines the relevance of the investigation of managerial decision-making processes in innovation contexts.

## **2.2 Managerial Decision-Making in Open Innovation Initiatives**

As previously mentioned, the review and evaluation of ideas by the management have been shown to determine the success of innovation processes (e.g., Cooper & Kleinschmidt, 1993; Fischer & Rohde, 2013; Hofstetter, Aryobsei, & Herrmann, 2018; Lu et al., 2019; Sethi & Iqbal, 2008). In this context, understanding managerial decision processes and underlying mechanisms are highly relevant for open innovation practice and success (Criscuolo, Dahlander, Grohsjean, & Salter, 2017). To provide initial insights into the impact of managerial decision-making and possible biases on the outcomes of a company's innovation efforts in general, two concrete examples from practice are illustrated in the following paragraph:

In the 1980s graphic experts at IBM developed an innovative subpixel rendering technology for display screens, called *Clear Type* that offered advantages for all kinds

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of devices with a screen (Brass, 2010). Within Microsoft though, senior managers felt threatened by the technology and impeded its acceptance within Microsoft. As a consequence, the technology was incorporated into the Windows system after a decade of its development, although the product was granted a patent and received much recognition in earlier days (see also Brass, 2010). Further evidence on the impact of managerial decision behavior on innovation outcomes is provided by a study from Sethi, Iqbal, and Sethi (2012). In their study, the researchers revealed that managers feel threatened by products with market and technology novelty and consequently develop resistance against the approval of related innovation ideas (Sethi, Iqbal, & Sethi, 2012).

The two examples provide practical evidence on how managerial decision making and specifically, individual biases affect the success of companies' innovation activities (see also Mueller, Melwani & Goncalo, 2011; Staw, 1995). Within open innovation initiatives, managers are exposed to large set of contributions from external as well internal origin, striving to find promising concepts for further development that lead into desirable solutions from a customers' and hence, profitable services and products from a company's perspective (e.g., Velamuri, Schneckenberg, Haller, & Moeslein, 2017). In this context, a recent study from Hofstetter, Aryobsei, and Herrmann (2018) yielded that managers' evaluation of innovation ideas do not fully correspond with customers' interests. In their study, Hofstetter, Aryobsei, and Herrmann (2018) investigated 18 firms and evaluated 381 ideas, which were rewarded in crowdsourcing contests. They found that a re-evaluation of the quality of presented ideas by the company's management did not correlate with the number of votes from customers within the crowdsourcing initiative. Another study on differing idea assessments between customers and managers was conducted by Mueller, Melwani, and Goncola (2011). In their study, Mueller, Melwani, and Goncola (2011) showed that customers' and managers' emphases within the evaluation of innovations differ distinctively: while they found customers to search for the most creative ideas, managers reached for the most feasible ones. Especially when managers focus on feasibility, they are not even able to recognize creative ideas (Mueller, Waslak, & Krishnan, 2014).

Given the mixed findings on differences between managers' and customers' assessments of ideas, it is worthwhile to generate ample evidence on the main determinants of managers' overall evaluations of innovation ideas. In line with

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previous research (e.g., Mueller, Melwani, & Goncola, 2011; Mueller, Waslak, & Krishnan, 2014), following study 1 aims firstly, to uncover the impact of managers' feasibility, originality and desirability assessment on the overall evaluation of innovation ideas for new product development. Secondly, the previous theoretical assumptions suggest that due to managers' responsibility to select the most promising ideas for product development (e.g, Kim & Wilemon, 2002; Martinsuo & Poskela, 2011), executives are expected to show the substantial relationship between the desirability and overall assessment of innovation ideas. The study aims to build a foundation for further analysis of managers' biases when it comes to the evaluation of ideas from different contributors within open innovation processes.



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### **3 Empirical Study 1: Determinants of the Overall Evaluation of Ideas within New Product Innovation**

Aim of study 1 is to reveal global insights on the evaluation of ideas and in particular, the main determinants of the overall evaluation of innovation ideas from a managerial perspective. Based on existing research, indicating that managers build up their overall evaluation of ideas on the estimation of feasibility, originality, and desirability of innovation ideas (e.g., Althuizen, Wierenga, & Chen, 2016; Martinsuo & Poskela, 2011; Mueller, Melwani, & Goncola, 2011; Velamuri, Schneckenberg, Haller, & Moeslein, 2017), these criteria are expected to show a substantial impact on the overall evaluation of ideas (see also hypothesis H1<sub>a</sub>).

**Hypothesis H1<sub>a</sub>:** Creativity, feasibility, and desirability evaluations of managers are the main determinants of the overall evaluation of ideas within new product development.

In line with existing research, managers are responsible for seeking the promising concepts for further product development that lead into desirable solutions from a customers' and hence, profitable services and products from a company's perspective (e.g., Velamuri, Schneckenberg, Haller, & Moeslein, 2017). Taking over the perspective of customers, put managers in charge to consider customer needs and preferences when making a decision (e.g., Alam & Perry, 2002; Joshi & Sharma, 2004; Slater & Narver, 1998). As previous studies found, making decisions for others is highly associated with a strong focus on the desirability estimation of events or objects (Danziger, Montal, & Barkan., 2012; Lu, Liu, & Fang, 2016), Lu, Xie, & Xu, 2013), Reyt, Wiesenfeld, & Trope, 2016). Also, in this particular situation of the selection of innovation ideas for new product development, it is the manager's job to seek the most desirable ideas for the customer (see above). For this reason, the assessed desirability of an innovation idea is expected to be the strongest predictor for managers' overall evaluation of ideas.

**Hypothesis H1<sub>b</sub>:** Managers' desirability evaluation of ideas is the strongest predictor of the overall evaluation of ideas.

The presented hypothesis H1<sub>a</sub> and H1<sub>b</sub> are subject of investigation in the first empirical study, dealing with managers' general assessment of ideas and the main determinants of the overall evaluation of ideas. The next paragraphs summarize the objectives, procedure, material, participants, and main results of the study.

### **3.1 Study Objectives**

Study 1 examined underlying factors that influence managers' overall evaluation of ideas within product development processes. Consistent with prior research (see above) creativity, feasibility, and desirability were predicted as the main determinants of managers' overall evaluation of ideas within new product innovation (see also hypothesis H1<sub>a</sub>). In line with existing literature and hypothesis H1<sub>b</sub>, the assessment of the desirability was assumed to be the strongest predictor of the overall evaluation of ideas.

### **3.2 Material & Procedure**

Empirical study 1 examines managers' evaluation of innovation ideas within new product development. A group of fictive product innovation ideas was designed as stimuli to observe managers' decision-making behavior when exposed to concrete product ideas. Following further details on the stimuli development, evaluation, and selection of the actual study are presented.

#### **3.2.1 Stimuli Development**

A case study with interns of an innovation hub of a global software company was conducted to create meaningful stimuli for this research. The task for the participants was to design packaging ideas for the launch of an innovative and exceptional water bottle for outdoor usage. The packaging was supposed to encourage customers to visit the company's website for further information about the product and to meet the

following criteria: (1) innovative & unique or (2) innovative & feasible. The ideas developed were extended and sketched by a professional graphic designer. As a result, six product-packaging ideas were developed.

### 3.2.2 Pretest of Product Ideas

An online pretest via *Amazon Mechanical Turk (Mturk)* was performed to select ideas that were similar in terms of feasibility and creativity (Mueller, Melwani, & Goncola, 2011; Mueller, Waslak, & Krishnan, 2014). Sixty *Mturk* participants took part in the study in exchange for \$0.30 per person. Twenty-four participants took less than six or more than fifteen minutes to complete the survey (average time for completion: 10 minutes). Four participants failed to answer at least 2 out of 3 attention questions accurately. The remaining 32 participants were considered for analysis (17 women, 15 men; average age:  $M = 35.19$  years, median: 36; 40.6% high school graduates, 9.4% associate degree, 34.4% bachelor's degree, 12.5% master's degree). All participants were employed at the time of the study. For the feasibility and creativity evaluation attributes from the IAT (*Implicit Association Test*, Greenwald, McGhee & Schwartz, 1998) were selected and aggregated into two distinct three-item scales ("uniqueness", "novelty", "creativity", "practicability", "usefulness" and "feasibility", Mueller, Melwani, & Goncola, 2011). Exploratory factor analysis confirmed the distinctiveness of the two scales. An analysis with Cronbach's  $\alpha$  showed satisfying results (Bortz & Döring, 2006) for the reliability of the two measurements (creativity  $\alpha = .89$ ,  $M = 5.22$ ; feasibility  $\alpha = .91$ ,  $M = 3.64$ ). Based on the research from Mueller, Melwani, and Goncola, 2014, two stimuli out of six were selected with similar creativity ranking (Stimulus 1: creativity  $M = 4.97$ ,  $SD = .96$ ; feasibility  $M = 3.75$ ,  $SD = 1.71$ ; Stimulus 2: creativity  $M = 4.97$ ,  $SD = .94$ ; feasibility  $M = 4.92$ ,  $SD = 1.30$ ).

### 3.2.3 Procedure

As a cover story, participants were told that they are employed in a company that produces a new and innovative high-quality outdoor water bottle called *Alex*, which is famous for lightweight and eco-friendly production. Participants were asked to evaluate an innovative packaging idea for the launch of this new product. Participants were randomly exposed to one out of two packaging ideas and asked to evaluate the present concept (see also *Appendix 13.2 Screenshots of Empirical Study 1*).

### 3.3 Study Variables

Measures were developed based on the Implicit Association Test (IAT, Greenwald, McGhee, & Schwartz, 1998) and the procedure of Mueller, Melwani, and Goncola (2011). For creativity and feasibility, single items were used as measurements (seven-point rating scales). Participants evaluated the creativity of provided ideas with  $M = 5.34$  ( $SD = 1.32$ , 1 = *not at all*, 7 = *totally agree*;  $n = 109$ ) and estimated the feasibility with  $M = 5.30$  ( $SD = 1.65$ , 1 = *not at all*, 7 = *totally agree*;  $n = 109$ ). Furthermore, an overall evaluation ( $M = 4.0$ ,  $SD = 1.69$ , 1 = *not attractive at all*, 7 = *excellent*,  $n = 109$ ) and a desirability rating ( $M = 3.35$ ,  $SD = 1.51$ , 1 = *not at all*, 7 = *totally agree*;  $n = 109$ ) were integrated as study variables. Table 2 presents the intercorrelations between the study variables.

Table 2

*Means, Standard Deviations and Intercorrelations of Study Variables*

Variables	<i>M</i>	<i>SD</i>	1.	2.	3.	4.
1. Overall Evaluation	4.0	1.69	1.00			
2. Desirability	3.35	1.51	.66***	1.00		
3. Feasibility	5.30	1.65	.26**	-.05	1.00	
4. Creativity	5.34	1.32	.49***	.48***	-.06	1.00

*Notes.*  $N = 109$ . \*\*\*  $p < .001$ , \*\*  $p < .01$  (two-tailed).

### 3.4 Participants

In total, 151 German-speaking managers from an executive panel of a Mid-European business school participated in the study. Forty-one managers were excluded from analysis because they failed an instructional manipulation check. The sample consisted of 22% women and 78% men. The average age was 46.30 years ( $SD = 9.22$ ,  $min. = 28$ ,  $max. = 71$ ,  $n = 109$ ). Most participants were from Switzerland (56%) and Germany (30.3%), whereas only 11% were from Austria (2.7% other countries). At the time of data collection, managers were working in the areas of marketing (37.6%), organizational strategy (15.6%), sales (15.6%), innovation (4.6%), or others (26.6%). 45.9% of managers said to be part of the top management team of their company

(, whereas 54.1% e.g., head of a department, team manager or project manager were categorized as lower-level managers).

### 3.5 Statistical Analysis

A linear regression analysis was carried out to estimate the direct effects of the three rating criteria on the *overall evaluation of ideas*, as theorized hypotheses H1<sub>a</sub> and H1<sub>b</sub> suggest. Managers' creativity, feasibility, and desirability ratings were included in the analysis as independent variables while controlling for the type of stimulus (stimulus 1 or stimulus 2). As dependent variable, the overall evaluation of ideas was considered. In comparison to correlation analysis, a regression model allows to estimate the individual direct effects of various independent variables on a single criterion at one time and takes intercorrelations within all independent variables into account (Howell, 2010). Furthermore, the interpretation of  $\beta$ -coefficients allows the prediction of a criterion based on the manipulation of single independent variables (Sedlmeier & Renkewitz, 2008). The statistical analysis was employed by using the statistical program *SPSS*.

### 3.6 Results

Regression analysis revealed a significant influence of independent variables on the criterion "overall evaluation of ideas" ( $F = 44.39$ ,  $R^2 = .56$ ) in line with hypothesis H1<sub>a</sub>: the feasibility assessment was found to predict the overall evaluation positive and significant ( $\beta = .30$ ,  $p < .001$ ). Furthermore, the analysis showed direct positive and significant impacts of creativity ( $\beta = .31$ ,  $p < .01$ ) and desirability ( $\beta = .63$ ,  $p < .001$ ) on the overall idea evaluation of managers. As a further result, the regression analysis revealed desirability as the strongest predictor of the overall evaluation, corresponding with hypothesis H1<sub>b</sub>. Table 3 gives an overview of the results of the employed regression analysis.

Table 3

*Regression Analysis Regarding the Prediction of the Overall Evaluation of Ideas*

Independent Variables	Criterion
	Overall Evaluation of Ideas
	$\beta$
Desirability	.62***
Feasibility	.30***
Creativity	.31**
Type of Stimulus	.12
$R^2$	.56
Adjusted $R^2$	.55
$F$	44.39

Notes.  $N = 109$ . \*\*\*  $p < .001$ , \*\*  $p < .01$ .

### 3.7 Discussion

In the present study, managers' creativity, feasibility, and desirability assessment of ideas were investigated to predict their overall evaluation of ideas. The study revealed all predictors as significantly influencing the criterion (H1<sub>a</sub>). In line with hypothesis H1<sub>b</sub>, the results showed that the desirability assessment of ideas is the strongest predictor when it comes to a single idea evaluation, in the absence of context information or competing idea alternatives. The present results confirm existing research on the main determinants of idea evaluation (Mueller, Melwani, & Goncola, 2011; Velamuri, Schneckenberg, Haller, & Moeslein, 2017). Furthermore, empirical evidence on the importance of desirability assessments for the overall evaluation of ideas has been delivered.

In open innovation initiatives, managers are confronted with a variety of ideas from different sources. Based on existing research, individual decision-making is highly dependent on all context information, such as the source of an idea (e.g., Lu et al., 2019). In study 1, managers had no additional information about the source of ideas. Therefore, the following question arises: *To what extent information regarding the*

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*source of an idea can impact managers' assessment and selection of respective innovation ideas?*

The next chapter provides theoretical assumptions on the influence of the idea source on managers' assessment and selection of ideas in new product development. More specifically, further analysis delivers theoretical evidence on managers' differentiated treatment of customers' and employees' ideas, manifested in a so-called *pro-customer bias* of executives. To the best of the author's knowledge, managerial decision-making processes within open innovation contexts have not been explained sufficiently by rigorous research. For this reason, this research contributes to this research gap by providing initial theoretical as well as empirical evidence on the question of what consequences the opening of R&D processes has on the assessment of internal and external ideas.

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#### 4 Conceptualization of Managers' Pro-Customer Bias

In open innovation processes, managers are exposed to various contributions from internal and external origin, striving to identify promising innovation ideas for product development (e.g., Fuchs, Prandelli, & Schreier, 2010; Kim & Wilemon, 2002). Existing research revealed that the evaluation and consideration of somebody else's input is highly dependent on the perceived characteristics of the contributor (e.g., Dalal and Bonaccio, 2010; Fischer & Rohde, 2013; Johnson & Johnson, 2017; Lu et al., 2019; Poetz & Schreier, 2012; Reyt, Wiesenfeld, & Trope, 2016; Yaniv & Kleinberger, 2000). In the context of R&D processes, earlier studies found mixed findings on the treatment of external in comparison to internal knowledge. For example, research on R&D processes showed an active avoidance of external or unfamiliar contributions, such as in very technical environments (e.g., Anton & Piller, 2015; Lifshitz-Assaf, 2017; Criscuolo, Dahlander, Grohnsjean, & Salter, 2017; Salter, Criscuolo, & Ter Wal, 2014). In this context, one of the most cited biases is known as the *not invented here syndrome* (e.g., for a review see Antons & Piller, 2015; Katz & Allen, 1980; 1982).

The paradigm of open innovation implies "...the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively" (Chesbrough, 2006, p.2). A growing number of organizations, such as NASA, is applying open innovation models, in which they strive explicitly for outsiders' input (e.g., Chesbrough, Vanhaverbeke, & West, 2014; Laursen & Salter, 2006). However, the effects of open innovation on employees' work inside the organization remains underexplored (e.g., Lifshitz-Assaf, 2017). In particular, given an open innovation environment, with a strong emphasis on the value of external input for innovation (e.g., von Hippel, 1986; Bogers & West, 2012), the question remains, *to what extent managers differentiate their evaluation and selection behavior when exposed to ideas with equal quality, from internal and external sources?*

The present research proposes that managers, confronted with ideas from customers and employees, systematically show a strong preference for external in comparison to internal contributions, resulting in a *pro-customer bias* in open innovation. This effect is suggested to occur based on managers' estimation of customers' and employees' ideation competencies regarding the creation of original, feasible, and desirable ideas.



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Building on theoretical evidence from two streams of research, construal level theory and reason-based choice literature, this investigation provides initial empirical evidence on managers' strong bias for external knowledge triggered by open innovation. The next chapters provide an introduction to the theoretical foundations of the proposed *pro-customer bias*. At first, relevant research on construal level theory is outlined as a possible psychological explanation of managers' treatment of ideas from internal and external origins.

#### **4.1 Managers' Pro-Customer Bias – A Construal Level Perspective**

Construal level theory (CLT) offers a framework to explain how individual contexts shape mental representations and respective outcomes (e.g., Wiesenfeld et al., 2017). Individuals' information encoding and retrieval processes are expected to vary on a continuum of abstraction, from relatively abstract (higher level) to concrete (lower-level) cognition (Trope & Liberman, 2010). Higher construal levels are associated with relatively broad, abstract, general, and inclusive processing. Lower construal levels in comparison involve concrete, detailed, specific experiences and representations. Empirical findings suggest that an abstract or concrete mental processing is highly associated with one's psychological distance to several events and stimuli. The more people are distant to an event, the more they can realize the whole picture ("seeing the forest", Liberman & Trope, 2008, p.1202) instead of single details ("seeing the trees", Liberman & Trope, 2008, p. 1202). Many studies link the construal level to various forms of psychological distance, for instance by employing temporal, spatial, social or hypothetical distance cues (e.g., Trope & Libermann, 2010; Wiesenfeld et al., 2017).

Construal levels can influence one's abilities to develop new ideas as well as the evaluation of ideas from others. Manipulating psychological distance on a social dimension, Polman and Emich (2011) showed that participants were more creative when creating ideas with a socially distant other compared to situations when they created ideas with a socially close other or alone. In line with CLT, Polman and Emich (2011) found that psychological distance enables people to process on higher construal levels, which leads to an increased ability to go beyond immediate experiences and hence facilitate new and more creative ideas (Trope & Liberman, 2003). Moreover, construal levels are argued to be highly associated with one's decision-making

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behavior in innovation contexts. In their study, Mueller, Wakslak, and Krishnan (2014) showed that construal levels alter the evaluation of creative ideas. From this point of view, high construal levels make people recognize creative ideas as being more creative, but it does not affect creativity evaluations for ideas in general (Mueller, Wakslak, & Krishnan, 2014). Transferring the empirical findings on construal levels and their impact on one's innovation ability and evaluation leads to certain assumptions regarding the managerial decision-making process within the evaluation and consideration of ideas from diverse origins.

Research on open innovation suggests that the integration of external knowledge facilitates the generation of novel ideas, resulting in an increase of companies' overall innovation capabilities and performances (Piezunka & Dahlander, 2015; Kornish & Ulrich, 2011; Schemmann, Herrmann, Chappin, & Heimeriks, 2016, Ulrich & Eppinger, 2008; Wang, Nickerson, & Sakamoto, 2018). Reflecting that notion, studies on construal level theory found psychological distance to be associated with broader (higher construal) vs. more narrow mindsets (lower construal) of the advisors (e.g., Reyt, Wiesenfeld & Trope, 2016) as well as the decision-makers (e.g., Lu, Xie, & Xu, 2013), resulting in a stronger originality and desirability focus (higher construal levels) or feasibility orientation (lower construal levels; e.g., Trope & Liberman, 2010; Yudkin, Pick, Hur, Liberman, & Trope, 2019). In this context, a study from Reyt, Wiesenfeld, and Trope (2016) showed that the construals of the advisors impact the decision-makers' evaluation and consideration of advice. Transferring these and further empirical results on the relationship between psychological distance, construal levels, and the evaluation of originality, desirability, and feasibility, the following conclusions for managers' evaluation of idea providers can be derived.

When confronted with customers' and employees' ideas, managers show a greater (socially, physically) distance to the external in comparison to the internal idea provider from an egocentric reference point (see also Trope & Liberman, 2010; Wiesenfeld, Reyt, Brockner, & Trope, 2017). Given the fact that psychological distance is highly associated with mental construal, the difference in the perceived proximity to customers and employees results in higher vs. lower-level construals. In this context, customers perceived as more distant to the decision-maker lead to higher levels of construal, whereas employees activate mental representations on lower construal levels. Higher levels of construals make decision-makers to focus on

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desirability and originality, contrasting lower-level construals which lead to a feasibility orientation (e.g., Danziger, Montal, & Barkan, 2012; Lu, Xie, & Xu, 2013; Mueller, Melwani, & Goncola, 2014; Mueller, Melwani, Loewenstein, & Deal, 2018; Wiesenfeld, Reyt, Brockner, & Trope, 2017). Assessing the ideation competencies of innovation contributors, customers (with higher construal levels) would be estimated as more able to come up with original (hypothesis H2<sub>a</sub>) and desirable ideas (hypothesis H2<sub>c</sub>) in comparison to employees. In contrast, employees (represented on lower construal levels) are estimated to be more competent in the development of feasible ideas (hypothesis H2<sub>b</sub>).

In open innovation, managers are confronted with a large number of ideas to find the most promising ones for further product development. As shown in study 1, managers' overall evaluation of ideas is highly dependent on the estimation of the desirability of an idea, supporting existing construal level research on decision-making for others (e.g., Grant & Berry, 2011; Mueller, Melwani, Loewenstein, & Deal, 2018). Based on the provided theoretical and empirical evidence, the decision-makers' desirability evaluation is highly associated with psychological distance. Consequently, managers are expected to perceive ideas from more distant origins as more desirable than those from close contributors. In this line, managers are expected to systematically prefer customers' over employees' contributions (see also hypothesis H3<sub>a</sub> and hypothesis H4<sub>a</sub>) within the selection of ideas, based on their belief that customers are more able to provide desirable ideas (hypothesis H3<sub>b</sub> and H4<sub>b</sub>).

As previously mentioned, the theorized *pro-customer bias* of managers can be based on two streams of research: construal level theory and reason-based choice. The next paragraph provides further support for the *pro-customer bias* by summarizing the main findings on reason-based choice and related anticipatory regret behavior in decision-making under uncertainty.

#### **4.2 Managers' Pro-Customer Bias – A Reason-Based Choice Perspective**

The evaluation and selection of innovation ideas have a direct impact on the new development process. Hence, an individual decision-maker plays a crucial role in the success of an innovation outcome. When it comes to important decisions, people think very carefully about relevant opportunities and possible consequences of their choice (Conolly & Reb, 2012; Connolly & Zeelenberg, 2002; Zeelenberg, 1999).

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Anticipatory regret theory states that decision-makers tend to avoid negative consequences and regrets by predicting and anticipating possible decision outcomes in advance, especially when it comes to risky decision-making (Connolly & Reb, 2005; Zeelenberg, Beattie, von der Pligt, & De Vries, 1996). As rash decisions are found to increase feelings of regret, individuals attempt to perform well-informed decision processes, resulting in more investments into information search (e.g., Connolly & Reb, 2012; Janis & Mann, 1977; Reb, 2008; Reb & Connolly, 2005). In this context, individuals evaluate possible reasons and justifications of one option against another. A behavior, which is even stronger when it comes to irreversible decisions or justifications of decisions to others (e.g., Reb, 2008; Connolly & Reb, 2012; Zeelenberg, 1999). Surprisingly, avoiding regret as a result of careless decision-making processes was found to interfere with rational decision making, documented as “reason-based choice effects” (e.g., Simonson, 1989; Connolly & Reb, 2012). Individuals highly concerned with the justifiability of their decisions search for relevant information to guide their choices to avoid being blamed by others (Connolly & Reb, 2012; Halamish & Liberman, 2017; Reb, 2008; Simonson, 1989). However, these concerns can sometimes lead to a stronger emphasis on irrelevant information or blind faith in external information of advisors when decision-makers feel uncertain about a decision (e.g., Gino, Brooks, & Schweizer, 2012).

Transferring the insights on reason-based choice and anticipatory regret behavior to the evaluation and selection process within open innovation, the following theoretical assumptions on managers' treatment of innovation ideas from various origins can be derived. In order to reduce possible risks in decision-making and outcome regret, managers seek for information to verify and justify their judgment (e.g., Zeelenberg, Beattie, von der Pligt, & De Vries, 1996; Zeelenberg, 1999). Therefore, executives look for cues to estimate the quality of innovation ideas (e.g., Elsbach & Kramer, 2003; Kasof, 1995). In this context, the origin of an idea functions as a source of information for the idea assessment. As research has shown, advice and feedbacks are weighted stronger to the extent that the contributor is considered as trustworthy and competent (Johnson & Johnson, 2017; Soll & Mannes, 2011; Tenney, MacCoun, Spellman, & Hastie, 2008). In this context, the competencies of idea providers are assessed based on their “expert power”, relating to their perceived task-relevant expertise or knowledge (French, Raven, & Cartwright, 1959; Birnbaum & Stegner, 1979; Bonaccio & Dalal, 2006). In this line, managers confronted with internal and external ideas, such

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as from customers and employees, take the respective information regarding the idea provider and their perceived competencies for ideation into account when evaluating and selecting the individual contributions. Consequently, the estimation of customers' and employees' competencies regarding the ideation of original, feasible, and desirable ideas is dependent on managers' perception of their respective task-relevant expertise.

#### *Competence to Create Original Ideas*

When it comes to the evaluation of the benefits from the integration of external input, open innovation, and organizational creativity procedures suggest that knowledge from the outside is a source of novel and original ideas (e.g., Kornish & Ulrich, 2011; Ulrich & Eppinger, 2008). Therefore, customers as independently working individuals of external origin could be assumed to create more novel and original ideas than employees.

#### *Competence to Create Desirable Ideas*

The long tradition of lead user research based on von Hippel (1986) and Urban & von Hippel (1988) emphasizes that especially lead users "have real-world experience with a need" and hence are best in the position to provide accurate information regarding it (Urban & von Hippel, 1988, p.570).

"Since lead users are familiar with conditions which lie in the future for most others, they can serve as a need-forecasting laboratory for marketing research. Moreover, since lead users often attempt to fill the need they experience, they can provide new product concept and design data as well." (Urban & von Hippel, 1986, p.791)

Arguing that open innovation attracts customers that are intrinsically motivated and highly involved with the company, the brand or its products (e.g., Piller, Ihl, & Vossen, 2010), managers expect such customers to be experienced in the identification of actual and prospect needs as well as the delivery of own innovation ideas. For this reason, customers in comparison to employees could be arguably more competent in the ideation of desirable ideas from a managerial perspective.

#### *Competence to Create Feasible Ideas*

When it comes to the development of feasible ideas, process-related knowledge regarding the implementation and realization of products is key. Those competencies

are more likely to be found in groups of experts than novices. Therefore, from a managerial point of view, employees could be seen as more competent than customers in the creation of feasible ideas.

As study 1 revealed the main determinants of managers' overall evaluation and respective selection of ideas is the estimation of a product's desirability. Based on the previous explanations, customers can be arguably more competent in the respective development of desirable ideas, based on their knowledge regarding their needs and possible demand fulfilling solutions (e.g., Urban & von Hippel, 1986). Managers exposed to a selection of customers' and employees' ideas for product development search for reasons for one option against another to justify their decisions to others (in line with e.g., Reb, 2008; Zeelenberg, 1999). Executives' perception that customers know better than employees to create desirable solutions based on their experiences can serve as a plausible justification for managers' preference for respective ideas. Given a selection scenario, managers are expected to show strong favor for customers' in comparison to employees' contributions within their selection of innovation ideas, therefore showing a *pro-customer bias* in open innovation.

### **4.3 Managers' Pro-Customer Bias in Open Innovation**

Based on the previous theoretical explanations in line with construal level, reason-based choice, and anticipatory regret theory, this research proposed a systematical preference of managers for customers' over employees' ideas, observable as a *pro-customer bias* on attitudinal and behavioral outcomes.

In the present investigation, managers' *pro-customer bias* indicates that even though employees and customers would provide the same ideas, managers show differentiated evaluation and selection behaviors depending on the idea provider, leading to the sponsorship of customers' ideas. Furthermore, the introduced *pro-customer bias* indicates that customers as external idea providers and representatives of the target group are estimated to create more original and desirable ideas, whereas employees are considered to offer more feasible ideas, from an executives' perspective, reflecting estimated advantages of open innovation (e.g., Lifshitz-Assaf, 2017). Using the term *bias* for the predicted effects seems to be appropriate, since it refers to the aforementioned definition of behavioral decision theory that the observed behavior deviates from a prescriptive norm (Kahn, Luce, & Nowlis, 2006; Tversky &

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Kahneman, 1986). The proposed *pro-customer bias* is distinct from previous concepts on professionals' evaluation and consideration preferences regarding internal and external knowledge in innovation contexts. More precisely, the theorized pro-customer bias stands in contrast to frequently mentioned *not invented here syndrome*, suggesting that R&D professionals reject the knowledge of external origin (e.g., Katz & Allen, 1980; 1982). In order to test the attitudinal and behavioral outcomes of the introduced pro-customer bias, the next paragraph summarizes the presented theoretical assumptions by deducing concrete hypotheses for further empirical investigation.

#### 4.4 Hypotheses

In the present chapter, initial theoretical evidence on the proposed *pro-customer bias* of managers was provided. In line with existing studies on construal level theory, reason-based choice and anticipatory regret, the present research suggests that executives consider customers as external contributors to be more competent in the development of original and also desirable product ideas. In comparison, employees as internal idea providers are expected to have higher abilities in the creation of feasible ideas. These theoretical assumptions regarding managers' attitudes towards employees and customers as idea providers within new product development are summarized by the following hypotheses, to be investigated in empirical study 2a and study 2b.

**Hypothesis H2<sub>a</sub>:** Managers believe that customers provide more original ideas than employees (*COI-Index*).

**Hypothesis H2<sub>b</sub>:** Managers believe that employees provide more feasible ideas than customers (*CFI-Index*).

**Hypothesis H2<sub>c</sub>:** Managers believe that in comparison to employees, customers are more likely to come up with desirable ideas (*CDI-Index*).

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Building on the previously presented theoretical assumptions regarding managers' attitudes, further hypotheses are deduced to investigate the influence of executives' beliefs on the actual behavior within pre-selection and selection processes in new product development. Although the literature on the *not invented here syndrome* suggests that individuals reject input from the outside, this research provides theoretical and empirical evidence that when it comes to the selection of innovative ideas, managers show a strong bias in favor of customers in comparison to employees as idea providers. Based on the prior mentioned evidence from construal and reason-based choice theory, the following hypotheses regarding the selection behavior of managers and its determinants are deduced for further analysis in study 3a, 3b and 4: studies 3a and 3b focus on the pre-selection of ideas, in which decision-makers are asked to select either the ideas from a company's customers or employees in the context of an innovation contest. Managers received no further information about the ideas' precise nature. Based on the single information that 50% of ideas are from customers and 50% from employees, they need to choose what ideas they would like to consider for further analysis. Given the fact that desirability is the strongest predictor for managers' overall evaluation, as shown in study 1, managers are expected to select those ideas, which they estimate as most likely to be desirable. In this context, the information regarding the idea provider functions as a possible cue that indicates the overall desirability of an idea and hence, its estimated market success. In light of the concept of the *pro-customer bias* of managers, this research provided strong theoretical evidence that managers consider customers in comparison to employees as more able to come up with original and, more importantly, desirable ideas. In order to pursue the most desirable and hence, profitable products managers are consequently supposed to prefer customers' over employees' ideas within the pre-selection of ideas. The following hypotheses summarize these theoretical assumptions regarding managers' pre-selection behavior for further investigation in studies 3a and 3b.



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**Hypothesis H3<sub>a</sub>:** Within the pre-selection of ideas, managers prefer customers' over employees' ideas.

**Hypothesis H3<sub>b</sub>.** Managers' belief that customers provide relatively more desirable ideas predicts the preference for customers' ideas within the pre-selection of ideas.

Within the pre-selection of ideas, managers are not exposed to concrete proposals but the information regarding the idea's provider. However, the present research suggests that the theorized *pro-customer bias* can be observed in realistic innovation scenarios, in which decision-makers are asked to evaluate and select elaborated ideas from customers and employees. Hypothesis H4<sub>a</sub> and H4<sub>b</sub> address these theoretical assumptions by stating that managers' preference for customers' over employees' in concrete choice scenario (H4<sub>a</sub>) manifests, based on executives' belief that customers are more competent than employees to provide market-satisfying ideas (H4<sub>b</sub>).

**Hypothesis H4<sub>a</sub>:** Within the selection of ideas, managers prefer customers' over employees' ideas.

**Hypothesis H4<sub>b</sub>:** Managers' belief that customers provide relatively more desirable ideas predicts the preference for customers' ideas within the selection of ideas.

The introduced theoretical hypotheses are tested empirically with a total number of five quantitative studies. Chapters 5 to 9 describe the procedure and results of each study in detail. In this context, the following studies 2a and 2b focus on the investigation of managers' attitudes towards customers and employees as idea providers when it comes to the development of original, feasible and desirable ideas

within new product development processes, corresponding with hypotheses H2<sub>a</sub>, H2<sub>b</sub>, and H2<sub>c</sub>. Gathering insights into the concrete decision-making behavior of managers, a pre-selection scenario is applied in studies 3a and 3b, testing managers' favor for customers' over employees' ideas, as hypothesized in hypotheses H3<sub>a</sub> and H3<sub>b</sub>. As explained above, in study 4 managers are exposed to concrete innovation ideas from customers and employees, to investigate their choice behavior within a selection process, corresponding with hypotheses H4<sub>a</sub> and H4<sub>b</sub>. Figure 2 provides an overview of the theoretical assumptions of the present research.

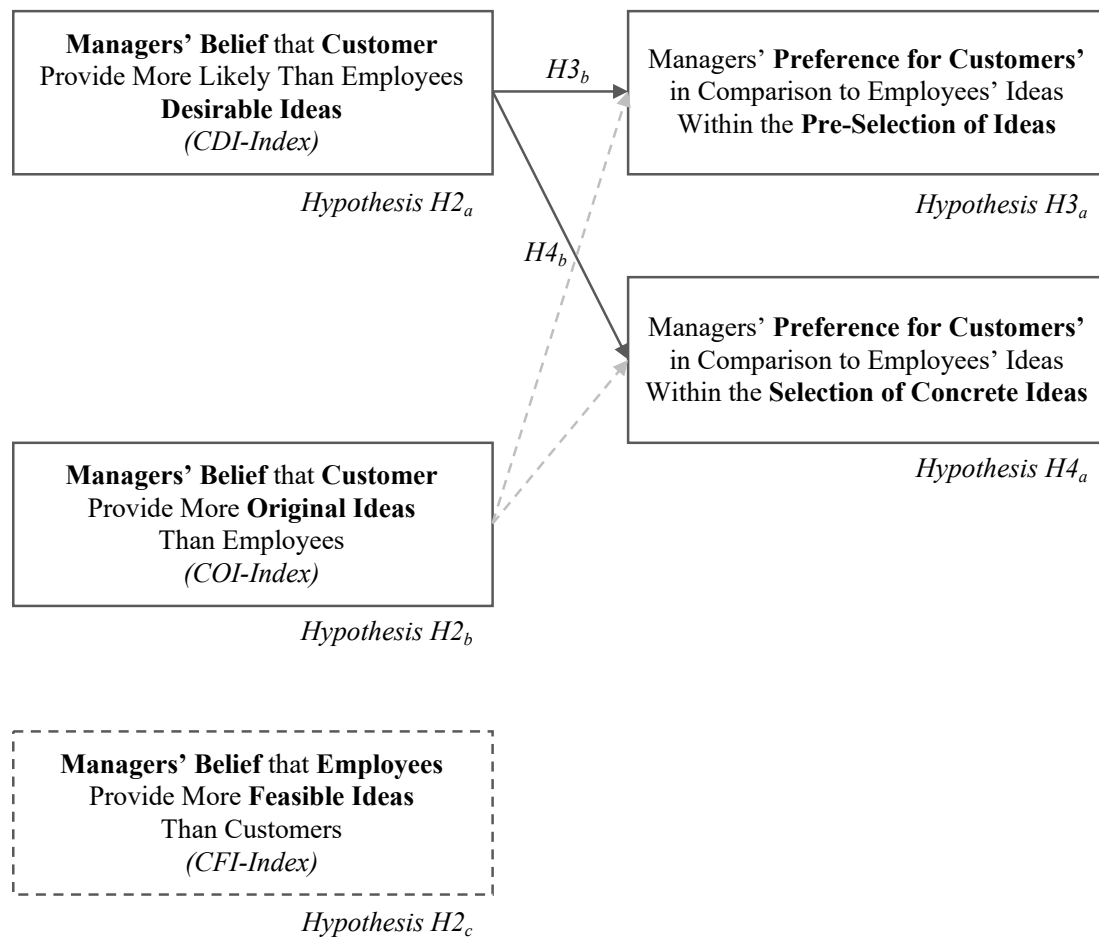


Figure 2. Summary of the Proposed Pro-Customer Bias Model and Respective Hypotheses.

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## 5 Empirical Study 2a: Managers' Pro-Customer Bias on an Attitudinal Level

### 5.1 Study Objectives

In order to assess possible differences in managers' perception of customers' and employees' ideas within new product development, study 2a focusses on the identification of managers' attitudes towards customers' and employees' ideation competencies. In line with the previously introduced hypotheses, study 2a tested managers' perception of employees' in comparison to customers' competence to create feasible ideas, expecting higher values for employees ( $H_{2a}$ ). Furthermore, an investigation of managers' hypothesized preferences for customers as idea providers within the development of original ( $H_{2b}$ ) and desirable ideas ( $H_{2c}$ ) was executed.

### 5.2 Material & Procedure

In order to test hypotheses  $H_{2a}$ ,  $H_{2b}$ , and  $H_{2c}$ , a quantitative online survey was developed using the survey platform *Unipark*. The average duration to complete the study was  $M = 211.32$  seconds (*median* = 204 seconds;  $SD = 75.33$ , *min* = 65, *max* = 394,  $n = 149$ ) in our sample.

After answering the screening questions, participants were asked to imagine themselves in the role of an innovation manager at a company producing pillows, a scenario based on the research of Hofstetter, Dahl, Aryobsei, and Hermann (2019). They were told that they are in charge of the evaluation and selection of ideas for product innovations. Afterward, participants indicated their perception of customers' in comparison to employees' competencies to create desirable ideas by responding to four statements on a seven-point rating scale (1 = *completely disagree*; 7 = *completely agree*; see also section 3.3 *Study Variables*). Followingly, participants filled out additional questions regarding their sociodemographic background (gender, age, country of citizenship, educational level) as well as work-related questions (work department, hierarchy level, involvement in innovation tasks, customer contact). At the end of the survey, participants were asked to evaluate customers' in comparison to employees' competencies regarding the creation of first, original and second, feasible ideas within new product innovation on a binary scale (see also chapter 3.3. *Study Variables*). For further information regarding the study material, procedure, and layout, see also *Appendix 13.3 Screenshots of Empirical Study 2a*.

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### 5.3 Study Variables

The purpose of the study 2a was to investigate managers' perception of customers' in comparison to employees' ideation competencies within new product development. For the assessment of managers' attitudes, the method of comparative judgments has been applied (Thurstone, 1959). Using comparative judgments or paired comparisons for the measurement of subjective preferences has a long tradition in social sciences (Brown & Peterson, 2009; Thurstone, 1927; Thurstone, 1959). Based on L.L. Thurstone's scientific approach, individuals perform comparative judgments when making discrete choices without a neutral indifference option (Thurstone, 1959). By performing pairwise comparisons between two concrete options, individual preferences can be investigated more accurately, since individuals are not used to making absolute evaluations regarding their attitudes, values or preferences in their daily life and are more common to estimate subjective tendencies for a specific outcome, especially in the context of decision-making under uncertainty (e.g., Brown & Peterson, 2009). Given its simplicity and potential to elicit unconscious, intuitive preferences of individuals, the method has been deployed in various complex value judgment contexts, such as health care, public choices or environmental strategies (Brown & Peterson, 2009; McKenna, Hunt, & McEwen, 1981).

In the present research, managers' assessment aims to reveal their perception of the relative ideation competencies of customers and employees when it comes to the creation of desirable ( $H_{2a}$ ), original ( $H_{2b}$ ) and feasible ( $H_{2c}$ ) ideas. Following each study measurements and their development are described in detail. Table 4 shows an overview of all considered variables and individual items of study 2a.

For the assessment of *managers' perceptions of customers' and employees' relative competencies to create desirable ideas*, a new instrument was developed within the present research. In this context, the term *desirable* refers to the identification of market demands, as the sum of customers' needs and the development of need fulfilling products and services as suggested by existing theories on the corporate market and marketing orientation (e.g., Grinstein, 2008; Kohli & Jaworski, 1990). Given the strong academic and practitioner's interests in the construct of market orientation and respective organizational consequences, various approaches for the assessment of market orientation for diverse situations exist today (for an overview see Grinstein, 2008).

Table 4

*Overview of Study Variables in Study 2a*

<b>Measurements</b>	<b>Scale (Anchors)</b>	<b>Items</b>
Competence to create desirable ideas <i>CDI-Index</i>	seven-point rating scale 1 = <i>completely disagree</i> 7 = <i>completely agree</i>	Employees can tell better than customers what can be a successful new product or service in the market. (R)  Customers are more able than employees to come up with ideas that are useful for the market.  Employees are better than customers when it comes to the identification of market needs. (R)  Customers know better than employees what the market really demands.
Competence to create original ideas <i>COI-Index</i>	Paired comparison scale 1 = <i>customers of a company</i> 2 = <i>employees of a company</i>	Who do you think has more original ideas? (i.e., in the sense of being novel, creative, or unique)
Competence to create feasible ideas <i>CFI-Index</i>	Paired comparison scale 1 = <i>customers of a company</i> 2 = <i>employees of a company</i>	Who do you think has more feasible ideas? (i.e., in the sense of being realizable)

Most of the recent measurement approaches focus on the general self-assessment of market orientation on an organizational level (e.g., Kohli & Jaworski, 1990). In contrast, the present study focuses on managers' perception of the individual competencies of customers and employees to develop desirable ideas within the concrete application context of new product ideation processes. As a consequence, a new measurement was built to enable such a reflective measurement, considering an outside perspective on customers' and employees' competencies, under consideration

of the previous research on market orientation measurements, such as Baker and Sinkula (2005), Deng and Dart (1994), Grinstein (2008), Kohli and Jaworski (1990), Kohli, Jaworski, and Kumar (1993) as well as Im and Workman (2004). As a result, four items with paired-comparisons were developed, to estimate *managers' perceptions of customers' and employees' relative competencies to create desirable ideas* on a seven-point interval scale (abbreviation: *CDI-Index*). For an item overview, see also Table 4.

To explore the factorial structure of the developed *CDI-Index*, the four items of the instrument were subject to an exploratory factor analysis with oblique rotation (*oblimin*). The principal component analysis with a cut-off point of .40 and the Kaiser's criterion of eigenvalues greater than 1 (see Field, 2009) yielded a single-factor solution as the best fit for the data, accounting for 62.3% of the variance. All results of the present factor analysis are shown in Table 5. As indicated by the screen test, no other possible factor solutions are suggested.

Table 5

*Exploratory Factor Analysis of the CDI-Index Items*

<b>Items</b>	<b>Factor loadings</b>
Employees can tell better than customers what can be a successful new product or service in the market. (R)	<b>.79</b>
Customers are more able than employees to come up with ideas that are useful for the market.	<b>.77</b>
Employees are better than customers when it comes to the identification of market needs. (R)	<b>.77</b>
Customers know better than employees what the market really demands.	<b>.82</b>

*Notes.* Extraction method: principal component analysis; oblimin rotation with Kaiser normalization; Factor loadings larger than .40 are in bold.

Given the underlying single factor structure of the items, the overall mean represents managers' perceptions of customers' and employees' competencies to create desirable ideas, referenced in the following in its short form *CDI-Index*. In the sample the *CDI-*

*Index* was  $M = 4.26$  on a 7-point-rating scale ( $SD = 1.11$ ). The analysis of the internal consistency with Cronbach's  $\alpha$  showed satisfying results with  $\alpha = .80$ , representing high reliability of the developed measurement scale. For a full overview of descriptive statistics of the developed *CDI-Index* see also Table 6.

Furthermore, two variables applying comparative judgments (Thurstone, 1959) were considered as measurements to investigate managers' perceptions of customers' and employees' relative competencies regarding the creation of original (following referred to as *COI-Index*) and feasible ideas (*CFI-Index*) within new product development. In this context, managers performed comparative judgments as binary choices between "1 = customers of a company" and "2 = employees of a company" regarding their relative ideation competencies (e.g., "Who do you think has more original ideas?"). Descriptive statistics showed that 58% of the managers considered customers and 42% of employees to have more original ideas ( $n = 149$ ). In contrast, when it comes to feasible ideas, only 22% of participants preferred customers over employees (78%,  $n = 149$ ) as idea providers.

For an overview of the intercorrelations of all study variables, see Table 6. In the following, further details on the participants of the study are presented.

Table 6

*Means, Standard Deviations and Intercorrelations of Study Variables*

<b>Variables</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><math>\alpha</math></b>	<b>1.</b>	<b>2.</b>	<b>3.</b>
1. Competence to create original ideas <i>COI-Index</i>	-	-	-	1.00		
2. Competence to create feasible ideas <i>CFI-Index</i>	-	-	-	-.04	1.00	
3. Competence to create desirable ideas <i>CDI-Index</i>	4.26	1.11	.80	-.59**	-.11	1.00

*Notes.*  $N = 149$ . \*\*  $p < .01$  (two-tailed).

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## 5.4 Participants

In total, 180 managers from an *Amazon Mturk* management panel participated and completed the present study. Thirty-one managers were excluded from the analysis due to their missing fit to the defined management panel criteria (more than 30 working hours per week, project or budget responsibility and employee responsibility for at least one employee). The sample consisted of 42.6% women and 58.4% men. The average age was 37.50 years ( $SD = 10.14$ ,  $min. = 20$ ,  $max. = 71$ ,  $n = 148$ ). All participants were from the USA. 15.4% of the participants held a high school degree, 14.8% an associate degree, 54.4% a bachelor's degree, 12.8% a master's and 2.7% a Ph.D., law or medical degree. At the time of data collection, managers were employed in the departments of operations (31.5%), sales (15.4%), innovation (12.8%), marketing (10.1%), organizational strategy (4.7%), or others (25.5%). The largest groups of participants indicated to work on a supervisor's (33.6%), team management (25.5%) or general management level (13.4%). 10.7% of the participants characterized themselves as project managers, 8.1% as office managers, 6% as regional managers, and only 2.7% as top managers. Furthermore, participants showed high scores in their work-related involvement in innovation tasks with  $M = 3.37$  ( $SD = .86$ ;  $min. = 1$ ;  $max = 5$ ,  $n = 149$ ; Cronbach's  $\alpha: \alpha = .86$ ) on a five-point rating scale with four items, considering the involvement in the development, evaluation, and selection of innovation ideas as well as the management of innovation projects.

## 5.5 Statistical Analysis

Two non-parametrical single sample binomial tests were employed to test the statistical significance of managers' attitudes towards customers' in comparison to employees' ideation competencies regarding the creation of original and feasible ideas, in line with hypothesis H2<sub>a</sub> and H2<sub>b</sub>. Furthermore, a one-sample t-test was executed to investigate managers' perceptions of customers' and employees' relative ideation competencies when it comes to the development of desirable ideas, as theorized in hypothesis H2<sub>c</sub>. The statistical analysis was employed using the statistic software *SPSS*.



## 5.6 Results

A non-parametrical binomial test with a cut-off value of 0.5 was executed to investigate whether participants consider customers or employees as more able to provide original ideas (dependent variable: *COI-Index*). Competing hypothesis H2<sub>a</sub>, the null hypothesis estimates that there is no difference between the options, leading to the expectation of equally distributed answers for customers (50%) and employees (50%) as adequate idea providers. The results of the non-parametrical test show that 58% of the participants considered customers and 42% of employees to have higher competencies within the development of original ideas, resulting in a statistically significant difference ( $p = .05$ ;  $n = 149$ ). Another non-parametrical test with a cut-off value of 0.5 was employed to analyze managers' assumptions regarding customers' and employees' ideation competencies when it comes to the development of feasible ideas (dependent variable: *CFI-Index*). In contrast to the null hypothesis, the analysis showed that 78% of the participants estimate employees to come up with more feasible ideas than customers (22%,  $p < .001$ ,  $n = 149$ ), in line with hypothesis H2<sub>b</sub>. For a summary of the result of both non-parametrical tests see also Table 7.

Table 7

*Results of Non-Parametrical Binomial Tests*

<b>Variables</b>	<b>Category</b>	<b>N</b>	<b>Observed Prop.</b>	<b>Test Prop.</b>	<b>p</b>
Competence to create original ideas <i>COI-Index</i>	Customers	87	.58	.50	.05*
	Employees	62	.42		
Competence to create feasible ideas <i>CFI-Index</i>	Customers	33	.22	.50	.00***
	Employees	116	.78		

*Notes.*  $N = 149$ . \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$  (two-tailed).

A one-sample t-test with a cut-off value of 4 (representing the mean value of the normal distribution for the *CDI-Index*) was employed to test hypothesis H2<sub>c</sub>, to test managers' perception of customers' and employees' competencies when it comes to the development of desirable ideas. The t-test showed significant differences within

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managers' perception of customers' and employees' competencies regarding the ideation of desirable ideas within new product innovation ( $M = 4.26$ ,  $SD = 1.11$ ,  $t(148) = 2.878$ ,  $p = <.001$ ). The results suggest that managers consider customers' in comparison to employees as more competent in the ideation of desirable ideas.

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## **6 Empirical Study 2b: Further Evidence on Managers' Pro-Customer Bias on an Attitudinal Level**

### **6.1 Study Objectives**

Aim of study 2a was to initially investigate managers' attitudes towards customers' and employees' relative ideation competencies using an online management panel of the platform *Amazon Mturk*. Even though some research revealed the advantages of *Amazon Mturk* panels with US-citizens in the consumer context and reported similar demographics of participants and analysis outcomes to studies with standard online panels (e.g., Buhrmester, Kwang, & Gosling, 2011), many scholars expressed concerns regarding the data quality (e.g., Paolacci, Chandler, & Ipeirotis, 2010; Smith, Roster, Goldon, & Albaum, 2016). In comparison to *Amazon Mturk*, regular panel companies maintain the identities and characteristics of their panel members, so that the company itself is the agent for quality control (e.g., Paas, Dolnicar & Karlsson, 2018; Smith, Roster, Golden & Albaum, 2016). When using *Amazon Mturk*, the control of the data quality is very limited, even if integrating filters for participants selection, additional filter questions, and quality checks, since the registration process of participants is not supervised (e.g., Paas, Dolnicar, & Karlsson, 2018). Hence, sociodemographic and work-related information can easily be manipulated by the participants to be considered for a large number of studies. In this context, recent research indicates that study results can substantively be different when using standard panels in comparison to *Amazon Mturk* (Smith, Roster, Golden, & Albaum, 2016).

For this reason, study 2b aims to replicate and validate the previously identified effects of study 2a by investigating managers' attitudes within an exclusive management sample from a Mid-European business school. Study 2b tests the replicability of the identified attitudes of managers towards customers' and employees' ideation competencies within new product development, using the same approach and procedure as study 2a.

### **6.2 Material & Procedure**

The study was conducted by using the online survey platform *Unipark*. Managers could decide whether they would like to participate in the German or English version of the study. As applied in study 2a, a fictive scenario of a pillow company running an

innovation contest was used to allow managers a more vivid image of their role as an innovation manager within a B2C product development process (Hofstetter, Dahl, Aryobsei, & Hermann, 2019). Subsequently, managers were exposed to the same questions and material as previously described in study 2a: after performing comparative judgments between customer and employees regarding their competencies within the development of desirable ideas (hypothesis H2<sub>c</sub>), managers were asked to decide whether customers or employees are able to come up with more original (hypotheses H2<sub>a</sub>) and feasible (hypothesis H2<sub>b</sub>) ideas. At the end of the questionnaire, managers responded to a set of sociodemographic and work-related questions.

### 6.3 Study Variables

As described in study 2a, three measurements were included in the study to assess managers' attitudes towards customers' in comparison to employees' ideation competencies. To assess managers' perception of customers' and employees' relative competence to create desirable ideas, the previously developed *CDI-Index* was included (for a full item overview, see chapter 3.3 *Study Variables*). On average managers showed a *CDI-Index* value of  $M = 4.32$  ( $SD = 1.03$ ).

Table 8

*Means, Standard Deviations and Intercorrelations of Study Variables*

Variables	<i>M</i>	<i>SD</i>	$\alpha$	1.	2.	3.
1. Competence to create original ideas <i>COI-Index</i>	-	-	-	1.00		
2. Competence to create feasible ideas <i>CFI-Index</i>	-	-	-	-.05	1.00	
3. Competence to create desirable ideas <i>CDI-Index</i>	4.32	1.03	.63	-.12	-.28**	1.00

*Notes.*  $N = 100$ . \*\*  $p < .01$  (two-tailed).

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The reliability of the scale measured by Cronbach's  $\alpha$  was satisfying with  $\alpha = .63$ . In line with study 2a, managers' perception of customers' and employees' competencies regarding the development of original and feasible ideas were assessed by applying the developed *COI-Index* and *CFI-Index*. According to the descriptive analysis participants had strong preferences for customers when it came to the creation of original ideas (66% customers, 34% employees,  $N = 100$ ) and a favor for employees as ideas providers within the development of feasible ideas (15% customers, 85% employees,  $N = 100$ ). Table 8 shows the descriptive analysis of the *CDI-Index* as well as the intercorrelations of all study variables.

#### 6.4 Participants

In total, 100 German- and English-speaking managers from an executive panel of a Mid-European business school participated in the study. 17% of the sample were women and 83% men. At the time of the study, the average age was  $M = 48.95$  years ( $SD = 12.00$ ,  $min. = 26$ ,  $max. = 75$ ,  $n = 100$ ). Most participants were from Switzerland (87%) and Germany (9%), whereas only 4% were from Austria. Managers were employed in the departments of marketing (35%), sales (35%), organizational strategy (7%), communication (5%), or others (18%). 41% of managers indicated to be part of the top management team of their company, whereas 59% were categorized as lower-level managers (e.g., head of a department, team manager or project manager). Furthermore, participants showed an average work-related involvement in innovation tasks with  $M = 3.37$  ( $SD = 1.07$ ;  $min. = 1$ ;  $max = 5$ ,  $n = 100$ ; Cronbach's  $\alpha$ :  $\alpha = .91$ ) on a five-point rating scale with four items, considering the involvement in the development, evaluation and selection of innovation ideas as well as the management of innovation projects.

#### 6.5 Statistical Analysis

As employed in study 2a, two non-parametrical single sample binomial tests were performed to test the statistical significance of managers' attitudes regarding customers' and employees' ideation competencies with a focus on originality (hypothesis H2<sub>a</sub>) and feasibility (hypothesis H2<sub>b</sub>). Furthermore, a one-sample t-test was executed to investigate managers' perceptions of customers' in comparison to

employees' competencies for the development of desirable ideas, as theorized in hypothesis H2c. The statistical analyses were employed by the statistic program *SPSS*.

## 6.6 Results

Table 9 shows the results of the two non-parametrical single sample binomial tests, analyzing managers' perceptions of customers' and employees' idea provider competencies when it comes to the development of original and feasible ideas. In contrast to the null hypothesis, which assumes equally distributed responses for the two options (1 = *customers* and 2 = *employees*), the analysis revealed statistically significant differences between the groups.

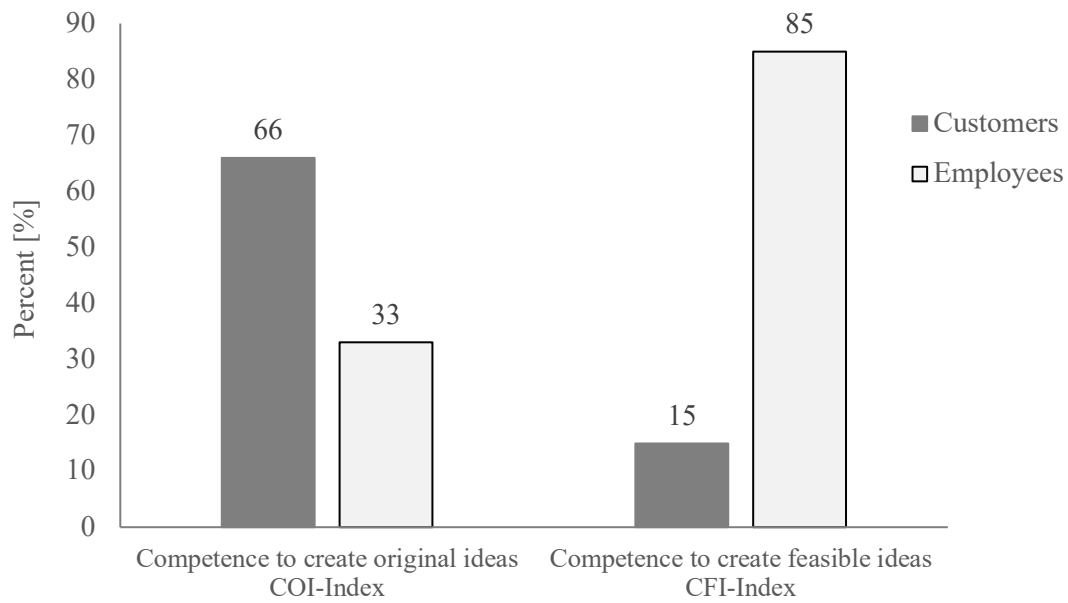
Table 9

*Results of Non-Parametrical Binomial Tests*

<b>Variables</b>	<b>Category</b>	<b>N</b>	<b>Observed Prop.</b>	<b>Test Prop.</b>	<b>p</b>
Competence to create original ideas <i>COI-Index</i>	Customers	66	.66	.50	.00**
	Employees	34	.34		
Competence to create feasible ideas <i>CFI-Index</i>	Customers	15	.15	.50	.00***
	Employees	85	.85		

*Notes.* N = 100. \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$  (two-tailed).

Based on the *COI-Index*, managers were found to show a strong preference for customers when it comes to the development of original ideas, in line with hypothesis H2a. Furthermore, employees are considered to create more feasible ideas than employees from a management perspective, as theorized in hypothesis H2b. Figure 3 illustrates managers' perception of the differences between the two groups within the creation of original and feasible ideas.



*Figure 3.* Results of the Non-Parametrical Tests for the COI-Index and the CFI-Index, Representing Managers Perception of Customers' and Employees' Competencies to Create Original and Feasible Ideas.  $N = 100$ .

In order to test for any statistically significant differences of the *CDI-Index*, representing managers' perception of customers' and employees' relative competencies to create desirable ideas, a one-sample t-test with the cut-off value 4 (representing the mean value of the scale, in the normal distribution) was executed. The analysis showed a significant difference of the *CDI-Index* ( $M = 4.32$ ,  $SD = 1.03$ ) in the sample to the normal distribution ( $t(99) = 3.10$ ,  $p < .01$ ), supporting hypothesis H2c.

### 6.7 Discussion Studies 2a & 2b

In line with the theorized hypotheses H2a, H2b, and H2c, study 2a and study 2b showed that managers perceive customers as more competent to create original (H2a) and desirable ideas (H2c). In contrast, employees are considered to be relatively more adept in the development of feasible ideas (H2b) from a management perspective. Two different samples, namely an *Amazon Mturk* and a panel from a Mid-European business school, were considered for the investigation to test the present hypotheses

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and replicability of effects. Both investigations revealed strong empirical evidence for managers' attitudes towards customers' and employees' ideation competencies.

Based on the insights regarding managers' attitudes towards customers and employees within the ideation process, the objective of further research is to investigate managers' actual decision-making behavior when confronted with ideas from customers and employees within new product innovation. Therefore, the following studies 3a and 3b focus on managers' pre-selection of ideas and respective decision-making biases when confronted with ideas from both, customers and employees.



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## 7 Empirical Study 3a: Managers' Pro-Customer Bias in the Pre-Selection of Ideas

### 7.1 Study Objectives

As described in the previous chapter, the next series of studies aim to investigate managers' decision-making behavior, within the pre-selection of ideas. In line with hypothesis H3<sub>a</sub>, managers are expected to show a strong preference for customers' over employees' ideas when no further information regarding the ideas' concrete nature is provided. Based on the theorized *pro-customer bias* and the previously presented empirical results on managers' attitudes, managers' strong preference for customers' ideas in the pre-selection is argued to be caused by their belief that customers provide more desirable ideas, as suggested by hypothesis H3<sub>b</sub>.

### 7.2 Material & Procedure

The study was conducted using the online survey platform *Unipark*. After answering three screening questions (see also chapter 7.3 *Study Variables* for further information on the pre-screening questions), participants were asked to imagine themselves in the role of an innovation manager at a B2C company producing pillows. A scenario adopted from the research of Hofstetter, Dahl, Aryobsei, and Hermann (2019). They were told that they are in charge of the evaluation and selection of ideas for product innovations. After introducing the managers to the scenario, they were exposed to a set of questions regarding their perception of customers' and employees' competencies to provide desirable ideas (*CDI-Index*). Subsequently, they were asked to perform a pre-selection of ideas, in which they had to select either ideas from customers or ideas from employees for further analysis (see also *Appendix 13.4 Screenshots of Empirical Study 3a* for details on the concrete study design). No further information regarding the ideas' precise nature was given. Figure 4 illustrates the pre-selection scenario of the study. After the pre-selection, managers were asked to evaluate customers' and employees' relative competence to create original (*COI-Index*) or feasible (*CFI-Index*) ideas, as previously applied in studies 2a and 2b. At the end of the questionnaire, managers responded to a set of sociodemographic and work-related questions (see also previous studies 2a and 2b). In the next paragraph, all dependent study variables and their respective descriptive statistics are presented in detail.

**Your Choice of Ideas:**

Imagine that your company ran an **ideation contest** with both **consumers of your firm and internal employees** participating and suggesting ideas. Many ideas have been submitted, about half from consumers and half from employees.

In your role as **innovation manager** you can now choose to see either the ideas of the consumer or the ideas from the employees. **You can only choose to see EITHER the ideas of the consumer or the ideas of the employees.**

Which ideas would you want to see?

The ideas from the  
consumers

The ideas from the  
employees

Figure 4. Screenshot of the Pre-Selection Scenario in Study 3a.

### 7.3 Study Variables

Given the descriptions in chapter 7.2 *Material and Procedure*, managers were asked to perform a binary pre-selection of ideas by choosing either ideas from customers or employees for further analysis (see also Figure 5). In this context, descriptive statistics revealed that 67% of the participants chose the ideas from the customers, whereas 33% preferred ideas from the employees ( $N = 134$ ). To assess managers' perception of customers' and employees' relative competencies to create desirable ideas, the previously introduced *CDI-Index* was included in the study. Managers showed an average *CDI-Index* of  $M = 4.13$  ( $SD = 1.06$ ). The reliability of the scale measured by Cronbach's  $\alpha$  was  $\alpha = .73$ , representing a satisfying internal consistency of the developed scale. As applied in the previous studies, the *COI-Index* and *CFI-Index* were included to investigate managers' attitudes towards customers' and employees' relative ideation competence when it comes to the creation of feasible and original ideas. In the sample, the *COI-Index* showed that 69.4% of the managers found customers, and 30.6% of employees as more competent to come up with original ideas. In contrast, 78.4% of the executives suggested that employees are more able to come up with feasible ideas (21.6% voted for customers). Table 10 shows the descriptive analysis of the *CDI-Index* as well as the intercorrelations of all study variables.

Table 10

*Means, Standard Deviations and Intercorrelations of Study Variables*

Variables	<i>M</i>	<i>SD</i>	$\alpha$	1.	2.	3.	4.
1. Competence to create original ideas <i>COI-Index</i>	-	-	-	1.00			
2. Competence to create feasible ideas <i>CFI-Index</i>	-	-	-	-.13	1.00		
3. Competence to create desirable ideas <i>CDI-Index</i>	4.13	1.06	.73	-.40**	-.09	1.00	
4. Pre-Selection of Ideas	-	-	-	.56**	.12	-.54**	1.00

*Notes.*  $N = 134$ . \*\*  $p < .01$  (two-tailed).

#### 7.4 Participants

In total, 134 US-managers from an *Amazon Mturk* management panel were considered to participate in the present study. A pre-screening was deployed to ensure participants managerial background, considering the number of working hours per week, participants' project and/or budget responsibilities as well as their role as supervisors (more than 30 working hours per week, project or budget responsibility and employee responsibility for at least one employee). 36.6% of women and 63.4% of men took part in the study. The average age was 37.20 years ( $SD = 9.61$ ,  $min. = 21$ ,  $max. = 63$ ,  $n = 134$ ). 12.7% of the participants hold a high school degree, 17.9% an associate degree, 53% a bachelor's degree, 14.9% a master's and 1.5% a Ph.D., law or medical degree. At the time of data collection, managers were employed in the departments of operations (31.3%), sales (20.9%), finance (16.4), innovation (7.5%), marketing (6.7%), organizational strategy (3.7%), or others (13.4%). The majority of participants indicated to work on team management (29.9%), supervisors (27.6%) or general management level (15.7%). 8.2% of the participants categorized themselves as regional managers, 7.5% as office managers, 6% as top managers, and 5.2% as project managers. Furthermore, participants showed relatively high scores in their work-related involvement in innovation tasks with  $M = 3.34$  ( $SD = .93$ ;  $min. = 1$ ;  $max = 5$ ,

$N = 134$ ; Cronbach's  $\alpha$ :  $\alpha = .85$ ) on a five-point rating scale with four items, considering the involvement in the development, evaluation, and selection of innovation ideas as well as the management of innovation projects.

### 7.5 Statistical Analysis

Statistical analyses were employed by using the statistical program *SPSS*. A non-parametrical binomial test was performed to test the statistical significance of managers' pre-selection behavior concerning customers' over employees' ideas (hypothesis H3<sub>a</sub>). Furthermore, a logistic regression analysis was executed to investigate the impact of managers' *CDI Index* on the pre-selection of ideas, as theorized in hypothesis H3<sub>b</sub>.

### 7.6 Results

In line with hypothesis H3<sub>a</sub>, the results of the non-parametrical binomial test show a significant preference of managers for ideas from customers (67% of the responses) in comparison to employees (34% of the responses,  $p < .001$ ,  $N = 134$ ; see also Figure 5). The results provide strong empirical evidence for the *pro-customer bias* of managers. Table 11 gives an overview of the results.

Table 11

*Results of Non-Parametrical Binomial Test*

Variable	Category	<i>N</i>	<i>Observed Prop.</i>	<i>Test Prop.</i>	<i>p</i>
Pre-Selection of Ideas	Ideas from the customers	90	.67	.50	.00***
	Ideas from the employees	44	.33		

*Notes.*  $N = 134$ . \*\*\*  $p < .001$  (two-tailed).

A logistic regression analysis was executed to investigate the influence of managers' attitudes on their pre-selection behavior as theorized in hypothesis H3<sub>b</sub>. The logistic regression enables an investigation of the impact of the continuous independent

variable ( $X$ ) *CDI-Index* (representing managers perspective on customers' in comparison to employees' competencies to create desirable ideas) on the dichotomous outcome variable ( $Y$ ) *Pre-Selection* (with the options 1 = *customers' ideas* and 2 = *employees' ideas*). In contrast to a linear regression model, in which the  $\beta$ - coefficient represents the change in  $Y$  with one unit change in  $X$ , the logistic model reveals a probability (odds ratio =  $e^\beta$ ) for the outcome  $Y$  in dependency of the change of  $X$  by one unit (Field, 2009; Peng, Lee, & Ingersoll, 2002). In this context, an odds ratio ( $e^\beta$ ) of 2 means that the probability that  $Y = 1$  is twice as likely as the value of  $X$  is increased by one unit. An odds ratio of .5 indicates a negative relationship between  $X$  and  $Y$ , describing that  $Y = 1$  is half as likely with an increase of  $X$  by one unit (e.g., Field, 2009). The following equation represents a linear function of the predictors in terms of log-odds (logit):

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X$$

$\beta_0$  = Intercept

$\beta_1$  = Regression weight of the predictor  $X$

Table 12 shows the results of the logistic regression model for the present study. The results indicated a significant association between the predictor *CDI-Index* and managers' pre-selection behavior ( $\chi^2(1) = 41.84, p < .001$ ), in line with hypothesis H3<sub>b</sub>. The odds ratio ( $e^\beta$ ) of .23 for the predictor *CDI-Index* revealed that the odds of choosing an employee's idea decreases approximately by 0.2 with the increase of the *CDI-Index* by one unit. Based on the results of the logistic regression model, the critical value of the predictor ( $X$ ) *CDI-Index* for the outcome ( $Y$ ) *Selection of Employees' Ideas* can be estimated by calculating the ratio of the negative intercept and the  $\beta$ - coefficient:

$$\text{critical value of } X_{(Y=1)} = \frac{-\beta_0}{\beta_1}$$

For the present logistic regression model, the critical value of the predictor ( $X$ ) *CDI-Index* for the outcome “selection of employees’ ideas” (vs. customers’ ideas) is the following ratio:  $\frac{-5.19}{-1.49} = 3.48$ . Accordingly, managers who show higher values of the *CDI-Index* ( $>3.48$ ), representing their perception that customers are more competent to provide desirable ideas are less than 50% likely to select ideas from employees. In contrast, managers who respond with a lower score of the *CDI-Index* are more likely to select ideas of employees’ in the pre-selection of ideas.

Table 12

*Results of Binary Logistic Regression: Impact of CDI-Index on Managers’ Pre-Selection of Ideas*

Predictor	$\beta$	$SE \beta$	Wald’s $\chi^2$	$df$	$p$	$e^\beta$ (odds ratio)
Constant	5.19	1.21	18.54	1	.00***	NA
<i>CDI-Index</i>	-1.49	.30	24.06	1	.00***	.23
Test			$\chi^2$	$df$	$p$	
Overall model evaluation						
Omnibus Tests of Model						
Coefficient			41.84	1	.00***	
<i>(x2 for 2log likelihood ratio)</i>						
Goodness-of-fit test						
Hosmer & Lemeshow			6.09	8	.64	

Notes.  $N = 134$ . \*\*\*  $p < .001$  (two-tailed). NA = not applicable.

Since logistic regression models do not have an equivalent to R-squared ( $R^2$ ; indicator for an explained variance by the predictors) in linear regression models, there are a variety of pseudo-R-squared measures, such as Cox & Snell R Squared or Nagelkerke R-squared. Both statistics are considered to be interpreted with great caution (e.g., Field, 2009). Cox & Snell's R-squared has a maximum of 1, indicating with higher R-squared values, the predictors can explain a more substantial proportion of the outcome's variance. For the present model, Cox & Snell's R-squared suggests that 26.8% of the variance of the outcome *Pre-Selection* can be explained by the logistic model and specifically by the predictor *CDI-Index*. However, the measure of Cox & Snell's R-squared has even for a perfect model, a theoretical maximum less than 1, so that an interpretation of the result is very difficult (Nagelkerke, 1991). Therefore, the pseudo-R-square Nagelkerke's R-squared adjusts the Cox & Snell R-squared by covering the full range from 0 to 1, leading to a simplified interpretation of results. For the present sample and logistic model, Nagelkerke's R-squared is estimated with a value of .374, representing a good model fit of the data. Figure 5 illustrates the logistic regression model, showing that the probability of choosing the ideas from employees in the pre-selection decreases with higher values of the *CDI-Index* (representing managers' perception that customers provide relatively more desirable ideas).

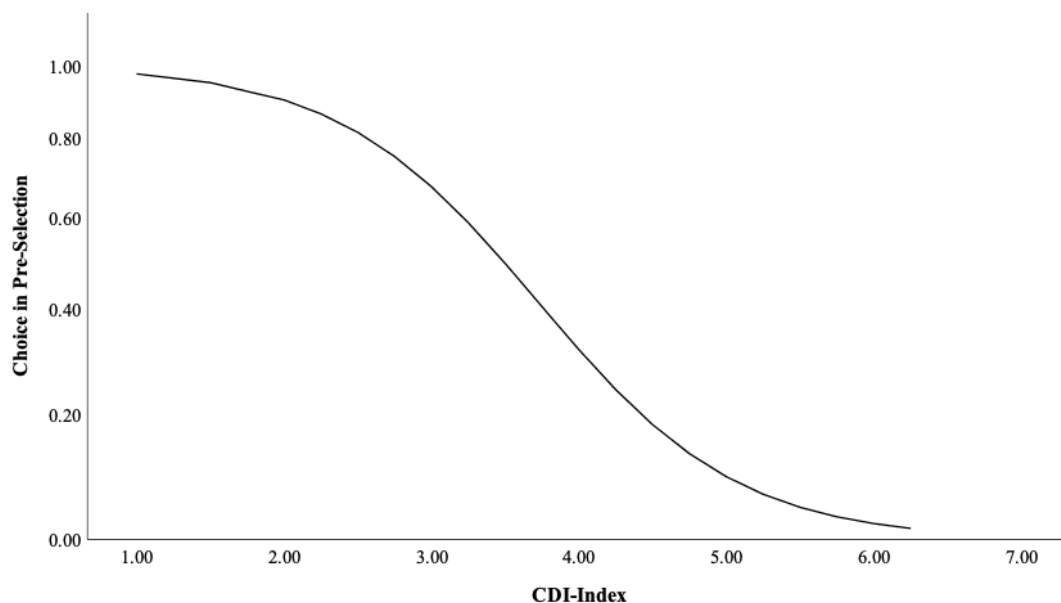


Figure 5. Likelihood for Managers' Decision to Choose an Idea from an Employee in Dependence of the CDI-Index.

### 7.7 Post Hoc Analysis

In line with hypothesis H3<sub>b</sub>, the *CDI-Index* was considered as a single predictor for the outcome pre-selection in the initial regression analysis. However, the present research revealed that managers show how a preference for customers' ideas, not only concerning desirability (*CDI-Index*) but also originality (*COI-Index*). Furthermore, managers showed that they considered customers in comparison to employees less likely to provide feasible ideas (*CFI-Index*). In order to provide a more conclusive analysis of the pre-selection behavior of managers and specifically their strong preference for customers' over employees' ideas, a post hoc analysis was executed, considering all three attitudinal measures *CDI-*, *COI-*, and *CFI-Index*. Table 13 gives an overview of the results of the logistic regression model.

Table 13

*Results of Binary Logistic Regression: Impact of CDI-Index, COI-Index, and CFI-Index on Managers' Pre-Selection of Ideas*

Predictor	$\beta$	$SE \beta$	Wald's $\chi^2$	<i>df</i>	<i>p</i>	$e^\beta$ (odds ratio)
Constant	-1.28	2.04	.39	1	.53	NA
<i>CDI-Index</i>	-1.25	.31	16.11	1	.00***	.29
<i>COI-Index</i>	2.56	.52	24.01	1	.00***	12.93
<i>CFI-Index</i>	1.11	.62	3.22	1	.07	3.04
Test			$\chi^2$	<i>df</i>	<i>p</i>	
Overall model evaluation						
Omnibus Tests of Model						
Coefficient			78.86	3	.00***	
<i>(x2 for 2log likelihood ratio)</i>						
Goodness-of-fit test						
Hosmer & Lemeshow			6.45	8	.60	

Notes. *N* = 134. \*\*\* *p* < .000 (two-tailed). NA = Not Applicable.



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The analysis revealed a significant influence of the *CDI-Index* on the pre-selection behavior in line with the previous results and hypothesis H3<sub>b</sub>. Furthermore, significant influences of managers' perceptions of customers' and employees' competencies to provide original ideas (*COI-Index*) were detected on a 95% confidence interval level. Integrating the three attitudinal measures in the model leads to an increase of the overall model quality as indicated by a value of .41 for Cox & Snell's R-squared and .570 for Nagelkerke's R-squared (maximum of the scales = 1). Furthermore, the Wald Chi-Square ( $\chi^2$ ) statistic, which implies the unique contribution of the single predictors under control of other influencing variables, shows that in the present sample, the *COI-Index* has a stronger impact on the pre-selection than the *CDI-Index*. As a consequence, the predictor *COI-Index* (representing managers' belief that customers can provide more original ideas than employees) should also be considered in the present model and further investigations.

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## **8 Empirical Study 3b: Replication of Managers' Pro-Customer Bias in the Pre-Selection of Ideas**

### **8.1 Study Objectives**

In study 3a, empirical evidence of managers' pre-selection behavior and its determinants were delivered. Study 3b aims to replicate and validate the previous findings regarding managers' strong preference for customers' over employees' ideas within the pre-selection of new product innovation (hypothesis H3<sub>a</sub>). Furthermore, additional insights into the main determinants of the pre-selection behavior, with a focus on managers' attitudes towards customers' and employees' relative ideation competencies should be delivered (hypothesis H3<sub>b</sub>).

In chapter 6.1 *Objectives Empirical Study 2b* possible limitations of *Amazon Mturk* studies and especially, the appropriateness of *Amazon Mturk* panels for management studies were described in detail. Based on the assumption that there might be differences in the sample structure and hence, the empirical results of *Amazon Mturk* studies and standard online panels, in study 3a managers of a high-quality panel from a Mid-European University were considered as participants.

### **8.2 Material & Procedure**

As successfully applied in previous studies, this study was conducted by using the online survey platform, *Unipark*. German, as well as English speaking managers, could participate in the study. A fictive scenario was introduced to enable a more vivid image of participants' role as innovation managers within B2C product development. Managers were told to be responsible for the evaluation and selection of innovative ideas for a company producing pillows (Hofstetter, Dahl, Aryobsei, & Hermann, 2019). After presenting the overall scenario, managers were asked to respond to a series of statements regarding their perception of customers' in comparison to employees' competencies to create desirable ideas (*CDI-Index*; see also section 6.3 *Study Variables*). On the next pages, managers were exposed to the fictive situation of an idea contest, in which customers and employees participated and suggested ideas for innovative pillows. In this context, the task of the participants was to carry out a pre-selection of ideas, in which they had to decide, whether they preferred customers' or employees' ideas (with no option to see the ideas of both groups). After the pre-

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selection, managers were asked to estimate customers' and employees' relative competence to create original (*COI-Index*) or feasible (*CFI-Index*) ideas, as previously applied in studies 2a, 2b, and 3a. At the end of the study, managers responded to a set of sociodemographic and work-related questions.

### 8.3 Study Variables

In line with the design of study 3a, managers were asked to perform a pre-selection of ideas, by choosing either ideas from customers or employees, respectively. The descriptive statistics revealed that 81.1% of the participants choose the customers' ideas, whereas only 18.9% preferred to see ideas from employees ( $N = 148$ ). As attitudinal measures, the *CDI-Index* was included in the study for the assessment of managers' perception of customers' and employees' ideation competencies regarding desirable ideas. Managers showed an average *CDI-Index* of  $M = 4.27$  ( $min. = 1.5$ ,  $max. = 7$ ;  $SD = 1.08$ ). The reliability of the scale measured by Cronbach's  $\alpha$  was  $\alpha = .71$ , representing a satisfying result for the internal consistency of the developed scale. Furthermore, the *COI-Index*, and *CFI-Index* were included in the study to assess managers' belief of customers' and employees' competencies to create original or feasible ideas. For the *COI-Index*, the descriptive statistic found that 75.7% of managers to believe that customers are more able to come up with original ideas than employees (24.3% of managers suggested employees be relatively more original). In contrast, when it comes to the ideation of feasible ideas, a large majority of participants, preferred employees (84.5%) in comparison to customers (15.5%) as idea providers. Table 14 shows the descriptive analysis of the *CDI-Index* as well as the intercorrelations of all study variables.

Table 14

*Means, Standard Deviations and Intercorrelations of Study Variables*

<b>Variables</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><math>\alpha</math></b>	<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>
1. Competence to create original ideas <i>COI-Index</i>	-	-	-	1.00			
2. Competence to create feasible ideas <i>CFI-Index</i>	-	-	-	-.41**	1.00		
3. Competence to create desirable ideas <i>CDI-Index</i>	4.27	1.08	.71	-.24**	-.04	1.00	
4. Pre-Selection of Ideas	-	-	-	.17*	.11	-.36**	1.00

*Notes.*  $N = 148$ . \*\*  $p < .01$  (two-tailed).

#### 8.4 Participants

As described in sections 8.1 and 8.2, executives from a high-quality panel from a Mid-European business university were recruited to participate in the study. In total  $N = 148$  participants completed the study and could be considered for the analysis (28.4% women, 71.6% men). At the time of the study, the average age was  $M = 45.74$  years ( $SD = 9.78$ ,  $min. = 23$ ,  $max. = 73$ ). The majority of participants were from Switzerland (62.8%) and Germany (27.7%), whereas only 7.4% of the executives were from Austria (2% other). Managers were employed in the departments of marketing (33.1%), sales (20.9%), organizational strategy (11.5%), innovation (4.1%), communication (3.4%), or others (26.9%). 34.5% of managers characterized themselves as part of the top management team, whereas 65.5% were categorized as lower-level managers (e.g., head of a department, team manager or project manager). Furthermore, participants showed an average work-related involvement in innovation tasks with  $M = 3.25$  ( $SD = 1.06$ ;  $min. = 1$ ;  $max = 5$ ,  $n = 100$ ; Cronbach's  $\alpha = .90$ ) on a five-point rating scale with four items, considering the involvement in the development, evaluation and selection of innovation ideas as well as the management of innovation projects.

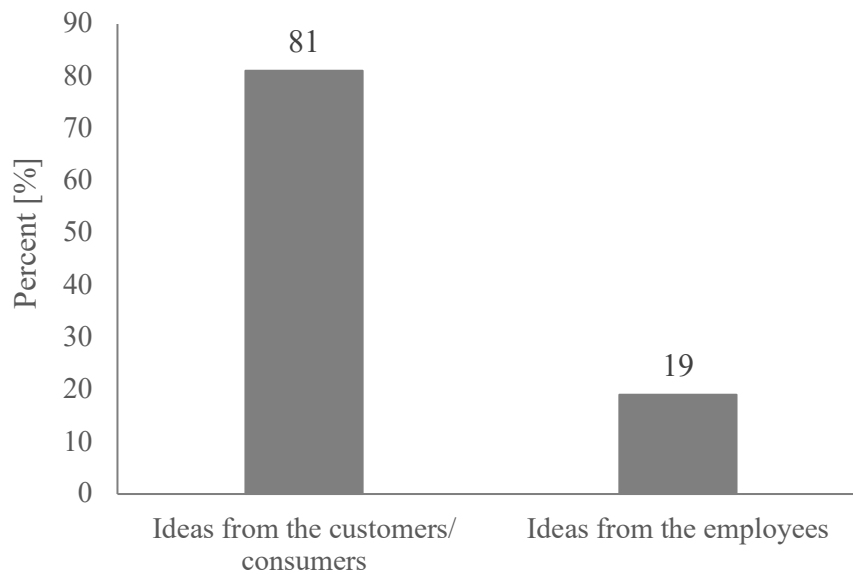


Figure 6. Results of the Non-Parametrical Binomial Test for Managers' Pre-selection of Ideas.  $N = 148$ .

### 8.5 Statistical Analysis

Both statistical analyses were carried out using the statistical program *SPSS*. A non-parametrical binomial test was performed to test managers' preferences for customers' over employees' ideas within the pre-selection scenario (hypothesis H3<sub>a</sub>). Furthermore, a binary logistic regression analysis was executed to investigate the impact of managers' *CDI Index* on the pre-selection of ideas, as assumed in hypothesis H3<sub>b</sub>.

### 8.6 Results

Hypothesis H3<sub>a</sub> suggests that within the pre-selection of ideas in a new product innovation process, managers show a strong preference for customers' over employees' ideas. A non-parametrical binomial test with a cut-off value of 0.5 was executed to test this assumption. The results of this analysis provide strong empirical support for hypothesis H3<sub>a</sub>: in comparison to the baseline condition, assuming an equal distribution of answers for the ideas from customers (50%) and ideas from employees (50%), a significant difference was found (81% customers' ideas; 19% employees' ideas,  $p < .001$ ,  $n = 148$ ; see also Figure 6).

Table 15

*Results of Non-Parametrical Binomial Test*

<b>Variable</b>	<b>Category</b>	<b>N</b>	<b>Observed Prop.</b>	<b>Test Prop.</b>	<b>p</b>
Pre-Selection of Ideas	Ideas from the customers	120	.81	.50	.00***
	Ideas from the employees	28	.19		

*Notes.* N = 148. \*\*\*  $p < .001$  (two-tailed).

Based on the results, the study replicates the previous findings from study 3a and even shows a stronger effect on managers' pre-selection behavior, supporting the theorized *pro-customer bias*. Table 15 summarizes the results of the analysis.

As a secondary analysis, a binary logistic regression analysis was employed to test hypothesis H3<sub>b</sub>. As predictor variable, the *CDI-Index*, representing managers' perception of employees' and customers' competencies to provide desirable ideas was included to analyze its impact on the binary outcome variable of the pre-selection of managers (1 = *customers' ideas* vs. 2 = *employees' ideas*). Table 16 shows an overview of the results of the analysis. The logistic regression analysis revealed a significant negative influence of the *CDI-Index* on managers' pre-selection of ideas ( $\chi^2(1) = 20.52$ ,  $p < .001$ ), in line with hypothesis H3<sub>b</sub>. Consequently, the stronger managers' believe that customers are more competent to provide desirable ideas, the less likely they choose an idea from an employee within the pre-selection. The .38 odds ratio ( $e^{\beta}$ ) of the *CDI-Index* indicates that the odds of choosing an employees' idea decreases by 0.38 with the increase of the *CDI-Index* by one unit. The critical value of the *CDI-Index*, representing a 50% probability of choosing an employees' idea within the pre-selection is 2.47 of the *CDI-Index*. According to this, managers who score higher than 2.47 on the *CDI-Index* and hence, are convinced that customers are more competent to provide desirable ideas, are more likely to prefer customers' over employees' ideas within the pre-selection (without further information regarding the ideas' concrete nature).

Table 16

*Results of Binary Logistic Regression: Impact of CDI-Index on Managers' Pre-Selection of Ideas*

Predictor	$\beta$	SE $\beta$	Wald's $\chi^2$	df	p	$e^\beta$ (odds ratio)
Constant	2.40	.92	6.85	1	.00***	NA
CDI-Index	-.97	.24	16.56	1	.00***	.38
Test			$\chi^2$	df	p	
Overall model evaluation						
Omnibus Tests of Model						
Coefficient			20.52	1	.00***	
<i>(x2 for 2log likelihood ratio)</i>						
Goodness-of-fit test						
Hosmer & Lemeshow			8.50	7	.29	

Notes.  $N = 148$ . \*\*\*  $p < .001$  (two-tailed). NA = Not Applicable.

Pseudo-R-squared measures show a reasonable model fit with a value of .13 for Cox & Snell's R-squared and .21 for Nagelkerke's R-squared respectively, indicating that approximately 20% of the variance of the pre-selection behavior as outcome variable can be explained by the predictor *CDI-Index*. Figure 7 shows an illustration of the logistic regression model.

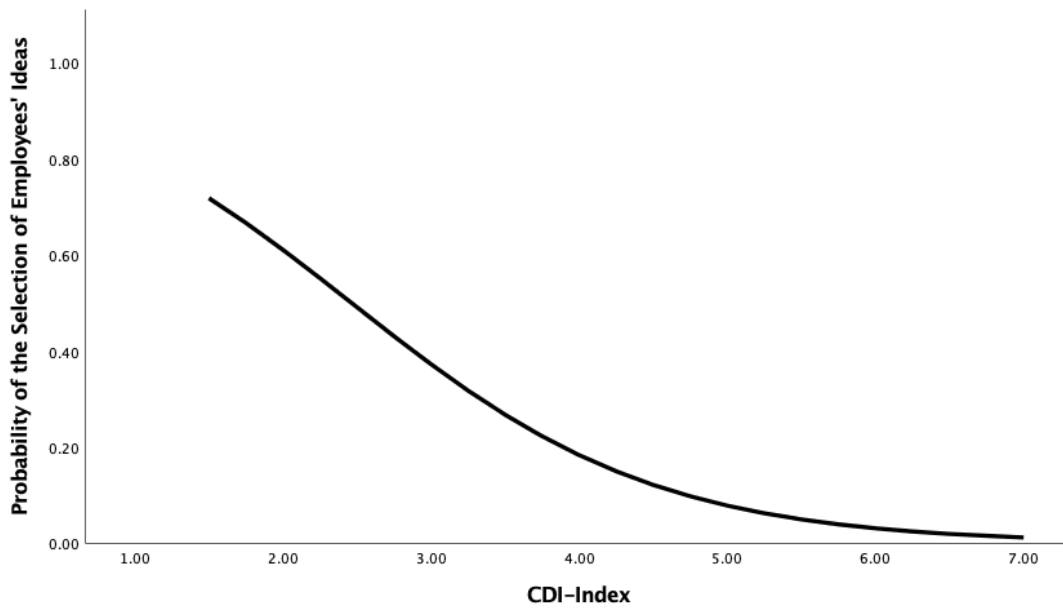


Figure 7. Likelihood for Managers' Decision to Choose an Idea from an Employee in Dependence of the CDI-Index.

### 8.7 Post Hoc Analysis

As previously examined in study 3a, a post hoc analysis was conducted to investigate the isolated effect of the *CDI-Index*, representing managers' perception of customers' and employees' competencies to create desirable ideas. In the logistic regression model, all three attitudinal measures of the study, the *CDI-Index*, *COI-Index*, and *CFI-Index* were included to analyze their impact on the managers' pre-selection behavior. Table 17 shows the results of the analysis.

Overall, in comparison to the baseline model, the logistic regression shows a significant data fit ( $\chi^2(1) = 25.49, p < .00$ ). In contrast to the post hoc analysis in study 3a, no significant impacts of the *COI-* and *CFI-*Indices were identified. However, the integration of the additional measures led to an increase in the pseudo-R-squared measures with .16 for Cox & Snell R-squared and .26 for Nagelkerke's R-squared, respectively.



Table 17

*Results of Binary Logistic Regression: Impact of CDI-Index, COI-Index, and CFI-Index on Managers' Pre-Selection of Ideas*

Predictor	$\beta$	SE $\beta$	Wald's $\chi^2$	df	p	$e^\beta$ (odds ratio)
Constant	-2.02	2.29	.78	1	.38	NA
CDI-Index	-.91	.25	13.20	1	.00***	.40
COI-Index	.92	.54	2.84	1	.09	2.50
CFI-Index	1.58	.87	3.29	1	.07	4.84
Test			$\chi^2$	df	p	
Overall model evaluation						
Omnibus Tests of Model Coefficient						
(x2 for 2log likelihood ratio)						
			25.49	3	.00***	
Goodness-of-fit test						
Hosmer & Lemeshow						
			3.07	8	.93	

Notes. N = 148. \*\*\* p < .000 (two-tailed). NA = Not Applicable.

### 8.8 Discussion Study 3a & 3b

In line with hypothesis H3<sub>a</sub>, studies 3a and 3b revealed empirical evidence for managers' *pro-customer bias* within the pre-selection of ideas: in both studies, executives showed a strong preference for customers' over employees' ideas, even though no information regarding the ideas' concrete nature was provided. Especially in the sample from the Mid-European business school, a major difference in the selection of customers' (81%) and employees' (19%) ideas was observed.

Furthermore, the studies uncovered that this behavioral tendency is highly influenced by managers' perception of customers' relative competence to provide desirable ideas (*CDI-Index*). As hypothesized in H3<sub>b</sub>, managers who scored high on the *CDI-Index*, were very likely to select ideas from customers (in comparison to ideas from employees), emphasizing the *pro-customer bias*.

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Studies 3a and 3b focused on managers' pre-selection of ideas from customers and employees when no further information regarding the ideas' concrete nature was presented. In order to investigate the identified *pro-customer bias* in the decision-making process between actual ideas from various sources, a further study was conducted. In the next chapter, detailed information regarding the study's objective, material, and procedure, participants and results are given.

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## 9 Empirical Study 4: Managers' Pro-Customer Bias in the Selection of Ideas

### 9.1 Study Objectives

In contrast to the previous studies, where managers performed a pre-selection of ideas from customers and employees, without any information on the ideas' concrete nature, the present study aims to reveal insights on managers' choice-behavior when confronted with actual ideas from different sources. In line with hypothesis H4<sub>a</sub>, the objective of study 4 is to detect managers' *pro-customer bias* within the choice of two concrete idea alternatives (one from a customer and one from an employee). Also, the study aims to uncover influencing factors on managers' preference for customers' over employees' ideas. As theorized in hypothesis H4<sub>b</sub>, managers' favor for customers' ideas is argued to be caused by their belief that customers have higher competencies than employees to come up with desirable ideas.


### 9.2 Material & Procedure

As in the previous studies, executives could participate in a German or English version of the study. At the beginning of the questionnaire, a fictive scenario was introduced to enable a vivid image of the participants' role as innovation managers within a B2C product innovation team. Executives were told to be responsible for the evaluation and selection of innovative ideas for a company, producing pillows (Hofstetter, Dahl, Aryobsei, & Hermann, 2019). After being introduced in the overall scenario, managers were asked to respond to a series of statements regarding their perception of customers' and employees' relative competencies to create desirable ideas (*CDI-Index*; see also section 6.3 *Study Variables*), as successfully applied in the previous empirical studies. Thereafter, managers were exposed to the fictive situation of an idea contest of a pillow company, in which customers and employees participated. The task of the managers was to perform a pre-selection of ideas. Managers had to decide whether they would like to see ideas from customers or employees (with no option to see ideas of both groups). After the pre-selection, a new scenario was introduced. More specifically, managers were provided with the following instruction:

*In your role as innovation manager, you will now see **an idea of a customer and an idea from an employee** of the company.*

*Your task is to find the **idea that you consider as most likely to be successful in the market!** The idea should be both highly original and useful for your customers.*

Subsequently, participants were exposed to a choice-paradigm, to indicate their preference for one of the two presented ideas on a seven-point Likert scale. The content of the provided ideas was randomly assigned to the participants., to control the effects of single idea descriptions. Figure 8 shows the study's choice paradigm.

 Management-Pool  
University of St.Gallen

26%

Idea A - from a Customer	Idea B - from an Employee
Cinema pillow - At the cinema glasses wearers often find it unnecessarily uncomfortable, because the seats have no corresponding devices such as the glasses pillow. The idea: just bring your own, inflatable pillow with fabric cover in your handbag.	Massage Pillow - A pillow that massages your tense neck while you are sleeping. Completely free of electricity and technology, this pillow massages the tense places by the movements of the sleeper. This is made possible by a super innovative material in the pillow. This makes you wake up super relaxed the next morning.
<p><b>Which Idea would you select?</b> Please evaluate the present concepts based on the estimated market success.</p> <p style="text-align: center;"> <input type="radio"/> Certainly Idea A              <input type="radio"/> Probably Idea A              <input type="radio"/> Rather Idea A              <input type="radio"/> Indifferent              <input type="radio"/> Rather Idea B              <input type="radio"/> Probably Idea B              <input type="radio"/> Certainly Idea B         </p>	
<input type="button" value="Weiter"/>	

Figure 8. Screenshot of the Choice Paradigm in Study 4.

On the next pages, participants were asked to estimate customers' and employees' relative competence to create original (*COI-Index*) and feasible (*CFI-Index*) ideas, as applied in the previous studies. At the end of the study, managers responded to a set

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of sociodemographic and work-related questions. The study was conducted by using the online survey platform *Unipark*. *Appendix 13.5 Screenshots of Empirical Study 4* gives an overview of the main study content.

### 9.3 Study Variables

In the present study, managers were asked to perform a pre-selection of ideas from customers and employees. The descriptive statistics detected that the majority of executives (80.7%) preferred the ideas from the customers, whereas only 19.3% chose to see ideas from employees of the company ( $N = 212$ ). After the pre-selection, managers were confronted with a choice between two concrete ideas, one from a customer and one from an employee. Managers indicated their responses on a seven-point Likert scale (1 = *certainly idea no.1* – representing the customer's idea; 7 = *certainly idea no.2* – representing the idea from an employee). On average participants responded with  $M = 3.51$  ( $SD = 1.91$ ,  $N = 212$ ).

As an attitudinal measure, the *CDI-Index* was included as an indicator for managers' perception of customers' and employees' competencies to create desirable ideas. In the present sample, an average *CDI-Index* of  $M = 4.32$  ( $min. = 1.5$ ,  $max. = 6.25$ ;  $SD = .98$ ) was found. The reliability of the scale measured by Cronbach's  $\alpha$  was  $\alpha = .55$ , representing a low internal consistency compared with the results of the previous studies. Furthermore, the *COI-Index*, and *CFI-Index* were included in the study, to estimate managers' beliefs regarding customers' and employees' relative competencies to come up with original or feasible ideas. Descriptive statistics revealed that 65.6% of managers considered customers, and 34.4% of employees as more able to come up with original ideas (*COI-Index*). In contrast, when it comes to the ideation of feasible ideas, executives believed that employees (84.9%) are more competent than customers (15.1%). Table 18 shows the descriptive analysis as well as the intercorrelations of the study variables.

Table 18

*Means, Standard Deviations and Intercorrelations of Study Variables*

Variables	<i>M</i>	<i>SD</i>	$\alpha$	1.	2.	3.	4.	5.
1. Competence to create original ideas <i>COI-Index</i>	-	-	-	1.00				
2. Competence to create feasible ideas <i>CFI-Index</i>	-	-	-	-.31**	1.00			
3. Competence to create desirable ideas <i>CDI-Index</i>	4.32	.98	.55	-.11	-.00	1.00		
4. Pre-Selection of Ideas	-	-	-	.20**	.04	-.27**	1.00	
5. Choice of Ideas	3.51	1.91	-	.04	.07	-.13	.32**	1.00

Notes.  $N = 212$ . \* $p < .05$ , \*\*  $p < .01$  (two-tailed).

#### 9.4 Participants

In total,  $N = 212$  executives of an exclusive panel from a Mid-European business university participated in the study and were considered for the analysis. 21.2% of the participants were women and 78.8% men. The average age was  $M = 49.18$  years ( $SD = 10.72$ ,  $min. = 23$ ,  $max. = 76$ ). Most of the participants were originally from Switzerland (77.4%) and Germany (17.5%; other: 5.2%). At the time of the study, participating executives worked in the areas of marketing (38.2%), sales (20.3%), organizational strategy (14.2%), communication (8%), innovation (2.8%), or others (16.5%). More than a third of the participants (37.7%) indicated to be top managers, whereas 62.3% were categorized as lower-level managers (e.g., head of a department, team manager, or project manager). Executives showed an average work-related involvement in innovation tasks with  $M = 3.31$  ( $SD = 1.18$ ;  $min. = 1$ ;  $max = 5$ ,  $n = 212$ ; Cronbach's  $\alpha$ :  $\alpha = .94$ ) on a five-point rating scale with four items. The measurement

scale considered managers' involvement in the development, evaluation, and selection of innovation ideas as well as the management of innovation projects.

### 9.5 Statistical Analysis

A single sample t-test with cutoff-value 4 was executed to investigate hypothesis H4<sub>a</sub>. As the dependent variable, the managers' choice was included in the analysis. Furthermore, a linear regression model was calculated to test the impact of managers' *CDI-Index* (predictor) on their choice behavior (outcome), in line with hypothesis H4<sub>b</sub>.

### 9.6 Results

The analysis of managers' choice behavior revealed a significant preference of managers for the ideas from customers over ideas from employees ( $M = 3.51$ ,  $SD = 1.91$ ,  $t(211) = -3.706$ ,  $p < .001$ ). The results provide empirical evidence for hypothesis H4<sub>a</sub> and the theorized *pro-customer bias*.

A second analysis was conducted to investigate the effect of managers' *CDI-Index* (representing their belief that customers are more competent than employees to create desirable ideas) on their choice behavior as an outcome variable. The linear regression analysis found marginal significant influences of the *CDI-Index* ( $\beta = -.26$ ,  $p = .06$ ) on managers' choice behavior ( $R^2 = .02$ ,  $F(1,211) = 3.69$ ,  $p = .06$ ). However, further analysis revealed that there was a strong confounding effect of managers' pre-selection on their choice behavior ( $R^2 = .02$ ,  $F(2,210) = 12.16$ ,  $p < .001$ ). When integrating the pre-selection of managers as an additional predictor in the linear regression model, the effect of the *CDI-Index* on managers' choice behavior was found to be fully mediated. The pre-selection behavior ( $\beta = 1.476$ ,  $p < .001$ ) showed a strong impact on the choice of managers, whereas no further influence of the *CDI-Index* on the outcome was found ( $\beta = -.10$ ,  $p = .47$ ). Furthermore, a logistic regression analysis of the predictor *CDI-Index* ( $e^{\beta} = .486$ ,  $p < .001$ ) on the supposed mediator *Pre-Selection of Ideas* revealed a significant relationship ( $\chi^2(1) = 15.279$ ,  $p < .001$ ) leading to the conclusion of a full mediation in line with Baron and Kenny (1986). Due to the dichotomous nature of the mediator, no indirect effect in line with the approach of Preacher and Hayes (2008) was derived in the context of the present analysis. Figure 9 illustrates the findings on the mediation effect of managers' pre-selection on the relationship between the *CDI-Index* and Choice of Ideas within the selection scenario.

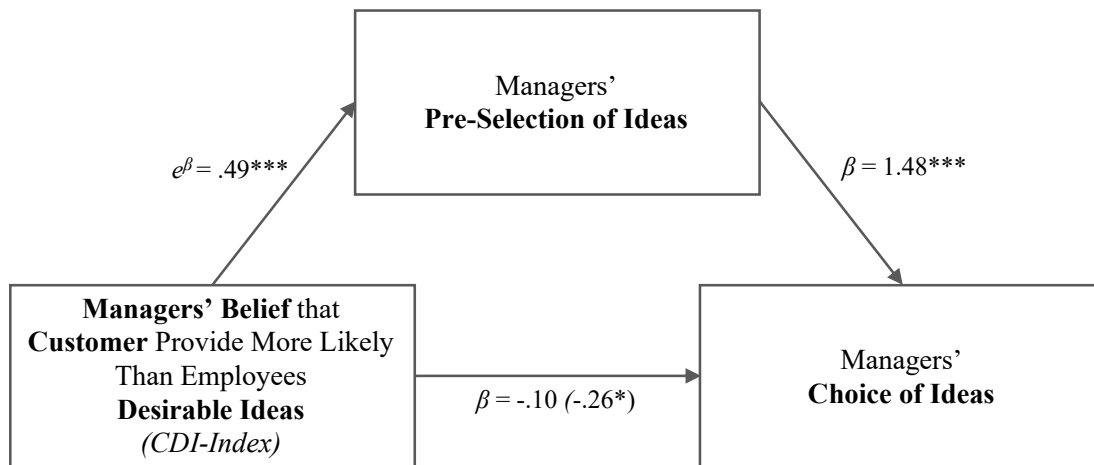


Figure 9. Mediation Model with Coefficients of the Linear and Binomial Regression Analysis. Illustration of the Impact of Managers' Pre-Selection (Mediator) on the Relationship Between the CDI-Index (Predictor) and Managers' Choice Behavior (Outcome). The  $\beta$ -Value in Brackets Represent the Regression Weight for the CDI-Index on the Choice of Ideas, Without Consideration of the Mediator in the Model. The Level of Significance is Indicated as Follows \*  $p < .10$ ; \*\*\*  $p < .001$ .

## 9.7 Discussion

In line with hypothesis H4<sub>a</sub>, study 4 confirmed that managers show a strong preference for ideas from customers over ideas from employees when exposed to two concrete new product ideas. As theorized in hypothesis H4<sub>b</sub>, managers' belief that customers provide more desirable ideas than employees (*CDI-Index*) can predict managers' choice behavior to a certain extent. However, managers' pre-selection behavior was found to eliminate the relationship between the *CDI-Index* and executives' choice when integrated into the regression model. Consequently, if managers' chose to see the ideas from employees or customers within the pre-selection of ideas, they stuck to their preference by selecting the idea from the same idea provider in the choice paradigm, regardless of their attitude towards the idea providers' competencies to create desirable ideas (*CDI-Index*). The methodological limitations of study 4 are addressed in chapter 11.4.1 *Methodological Limitations*.



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## **10 Qualitative Study: Managerial Activities to Promote the Internal Innovation Capabilities of Employees**

### **10.1 Study Objectives**

The quantitative studies of this research examined managers' strong preference for customers' over employees' ideas. Besides the fact that the participants were confronted with either (1) solely a pre-selection between customers and employees (with no further information regarding the idea's content) or (2) identical ideas from fictive customers' and employees' (and hence, no qualitative difference between the ideas existed), managers' showed a strong favor for customers contributions. The results provide empirical evidence for the theorized *pro-customer bias*, referring to a general positive attitude of managers for external ideas and especially for customers as idea providers in open innovation contexts.

Obviously, the identified *pro-customer bias* can have a downside for internal innovation initiatives and especially, the recognition of employees' ideas in new product innovation. For this reason, the objective of the present qualitative study is to identify relevant measures on how managers on a top and lower management level can promote internal innovation capabilities, the recognition of employees' input and thereby, mitigate the identified *pro-customer bias* from an organizational viewpoint.

### **10.2 Material & Procedure**

The qualitative survey was conducted as a paper-pencil study. Managers responded within less than five minutes to a short questionnaire (see also *Appendix 13.6 Qualitative Study - Questionnaire* for a full overview of the survey content). In the first part of the survey, executives were asked to imagine management activities of top and lower-level managers to foster successful innovation within the organization. They were told to focus on managers' domain-specific primary responsibilities and tasks to support internal innovation. In the second part, participants responded to a set of sociodemographic and work-related questions.

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### 10.3 Participants

In total,  $N = 23$  top and lower-level managers of a management workshop from a Mid-European business school were recruited for the study. The sample consisted of 17.4% of women and 82.6% of men. Most of the participants were from Germany (60.9%) and Switzerland (34.8%) and others (4.3%). At the time of the study, the average age was  $M = 42.48$  years ( $SD = 8.46$ ,  $min. = 28$ ,  $max. = 56$ ). 69.6% of the executives indicated to work in top management, whereas 30.4% categorized themselves as part of lower-level management teams. Participants' managerial responsibility for employees ranged from 0 to 140 employees. On average executives were responsible for  $M = 20$  ( $SD = 34$ ) employees in their team.

### 10.4 Results

The study revealed relevant activities for top and lower-level managers to promote internal innovation capabilities and especially the recognition of employees' innovation ideas within the company. Table 19 gives an overview of the main insights of the qualitative study-

For the top management, participants suggested a stronger emphasis on the creation of a corporate environment that facilitates internal innovation. More precisely, when it comes to the creation of an inspiring innovation atmosphere, top managers were argued to be responsible for the setting of concrete innovation objectives within the company, focusing on internal innovation initiatives. Furthermore, participants proposed that top managers need to offer incentives for employees, motivating them to develop innovative ideas and concepts, alongside their daily work. Furthermore, top managers need to secure the allocation of respective monetary and non-monetary resources, as e.g., space, time, necessary material and internal support for employees willing to contribute to the innovation objectives of the company. Moreover, the implementation of basic innovation procedures, the definition of responsibilities within the top and lower-level management as well as the establishment of platforms to exchange innovation ideas and respective implementation concepts were proposed to support internal innovation activities.

Table 19

*Overview of Qualitative Study Results: Activities from Top and Lower-level Managers to Foster Internal Innovation*

<b>Top Managers Activities</b>	<b>Lower-Level Managers Activities</b>
Create a fail forward culture: enable and encourage all to accept risks of failure and to learn from failures	Encourage employees to spend time thinking and to experiment
Create and live a culture of failures	Encourage openness
Create an environment in which innovation could be enabled	Empower teams for being creative and develop innovations
Give freedom to become creative	Project management, ideation, testing
Enable, give frame as much as needed and as little as possible	Offer coaching for R&D people within the company
Implement basic processes, structure, and responsibilities to drive innovation, ensure that innovation is being developed "beyond the product", not only in typical product R&D	Give freedom to individuals being active in innovation management projects, but also highlight conflicts in terms of priorities and objectives
Implement failure culture (top-down) and allow learning from failure, encourage out of the box thinking, experiments, trial and error, communicating of learning curves	Motivate all employees to be part of the innovation culture
Innovation has to be driven by the top management and needs to be part of the company's mindset	Discuss new ideas for areas of responsibility
Motivate teams and inspire them	Allow out-of-the-box-thinking
Ensure freedom to act for innovators	Create an atmosphere for creativity
Create a culture for innovation	Identify needs and ideate
Create incentives for innovative ideas	Celebrate success
Define a proper process (e.g., design thinking) which is open and stimulates creativity and innovation, but which is also target and performance-oriented	Free-up time with colleagues x-functional inter- and intra-company wide
Build platforms where people can exchange ideas and projects	Exchange ideas with external companies/ universities/ industries

*Notes.* Extract of the original statements from the qualitative management survey with  $N = 23$  participants.

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Creating a culture for innovation by a top-down approach requires a visible prioritization of internal innovation objectives. Participating executives of the present study suggest that managers need to inspire their teams and motivate them, to speak up for innovative ideas within the company. Moreover, managers should promote out-of-the-box and creative thinking within the company. Establishing a positive failure-culture and encouraging their employees to experiment and test innovative concepts, top managers can provide direction for an innovation-driven mindset within the organization.

Based on the statements of the study participants, lower-level management plays a crucial role when it comes to the execution of internal innovation initiatives. In order to increase employees' innovation capabilities, lower-level managers should provide support for the development of individuals' project management and ideation skills. Furthermore, lower-level management can sponsor employees by educating them on the identification of essential customer needs and the creation of respective desirable concepts. Since being in charge of the direct (operational) leadership of employees, lower-level managers can strengthen internal innovation by encouraging individuals to spend time thinking creatively, experimenting and creating new approaches, processes, and solutions for the company.

Based on the responses of the executives participating in the study, promoting employees' innovation capabilities and the recognition of internal ideas is not only a matter of building respective organizational structures but more importantly the creation of a respective mindset of top and lower-level managers. Managers need to open up for internal ideas and enable an exchange of internal ideas to identify promising concepts within the company. Furthermore, managers need to act as role models, taking risks by supporting promising internal ideas, even if the individual and organizational outcomes cannot be estimated at first. Learning from failures as well as celebrating success within the organization is supposed to be crucial for the promotion of internal innovation efforts, from the study participants' point of view.

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## 11 General Discussion

### 11.1 Key Findings & Discussion

Opening innovation processes to external contributors can enable organizations to increase their innovation capabilities by collecting a large number of suggestions for new product development (e.g., Chesbrough, 2003, Homfeldt, Rese, & Simon, 2019; Kornish & Ulrich, 2011; Laursen & Salter, 2006). The incorporation of external knowledge for further development is challenging for organizations (e.g., Dahlander & Piezunka, 2014; Salter, Criscuolo, & Ter Wal, 2014). Especially the evaluation and selection of promising ideas is critical for innovation success (Criscuolo, Dahlander, Grohsjean, & Salter, 2019; Eling, Griffin, & Langerak, 2016; Koen et al., 2001; Lu et al., 2019). However, little attention has yet been paid to the individual decision-making process of managers when confronted with ideas from internal and external origins in open innovation. The present research addresses this research gap by examining the question “to what extent managers differ in their evaluation and selection behavior when confronted with innovation ideas either from customers or from employees?”. Based on existing studies from construal level and reason-based choice theory, managers are argued to show a *pro-customer bias* in open innovation. Six quantitative studies with a total number of 875 managers were conducted to investigate managers' respective decision-making and selection behavior and confirmed this theoretical assumption. The findings of this research can be concluded with the following statements:

In line with existing literature, managers' evaluation of the feasibility, originality and desirability determine their overall evaluation of innovation ideas (Martinsuo & Poskela, 2011; Mueller, Melwani, & Goncola, 2011; Mueller, Waslak, & Krishnan, 2014; Velamuri, Schneckenberg, Haller, & Moeslein, 2017). As shown in study 1, the desirability estimation of an idea is the strongest predictor of the overall evaluation (see also chapter 2 *Empirical Study 1: Determinants of the Overall Evaluation of Ideas within New Product Innovation*). The following studies 2a and 2b revealed that executives consider customers to provide more original and more desirable ideas in comparison to employees, whereas they expect employees to be more competent in the creation of feasible ideas. Contrasting literature on the avoidance of external contributions in R&D as, e.g., research on the *not invented here syndrome* (Katz &

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Allen, 1980; 1982; Salter, Criscuolo & Ter Wal, 2014), in studies 3a, 3b and 4, executives were observed to show a strong preference for customers' over employees' ideas, confirming the theorized *pro-customer bias* within the selection of ideas. Managers' preferences for customers' over employees' ideas were found to be predicted by executives' predominant belief that customers can provide more desirable ideas than employees.

## 11.2 Theoretical Contributions

The academic contribution of this research is threefold: firstly, the present findings extend existing research on the evaluation and selection of innovation ideas. It has been shown that the assessed desirability of an idea is the strongest predictor for the overall evaluation from a managerial point of view. In this context, current theories on originality, feasibility and desirability evaluation in choice paradigms are applied and extended to a management context (Danziger, Montal, & Barkan, 2012; Lu, Liu & Fang, 2016; Lu, Xie & Xu, 2013, Mueller, Melwani, & Goncola, 2011; Mueller, Wakslak, & Krishnan, 2014).

Secondly, this work broadens current studies on construal level theory, and in particular regarding the impact of psychological distance on the decision-making behavior in a management sample (for a review: Wiesenfeld, Reyt, Brockner, & Trope 2017). More precisely, the present investigations focus as first on the effect of the psychological distance of the provider of an innovation idea, on managers' idea selection behavior in an open innovation context. Whereas previous construal level literature focused mainly on consumers' evaluations and consideration of events and objects (e.g., Liu, Dallas, & Fitzsimons, 2019; Lu, Liu, & Fang, 2016; Trope & Liberman, 2010), the findings of the presented studies contribute to emerging research on construal levels theory in organizations.

Thirdly, this research provides initial theoretical and empirical evidence on managers' *pro-customer bias* in new product development, contributing to emerging management and organizational behavior literature in the context of open innovation. Even though opening R&D process to external contributors is argued to be critical to innovation success (Chesbrough, 2006; Dahlander & Piezunka, 2014; Urban & von Hippel, 1988), previous studies has revealed avoidance behavior when it comes to the incorporation of knowledge from external or distant origin (e.g., Katz & Allen, 1980; Katz & Allen,

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1982; Piezunka & Dahlander, 2015; Salter, Criscuolo, Ter Wal, 2014). In contrast, this research revealed the opposite effect, namely that executives prefer external (customers') over internal (employees') ideas. By doing so, this research provides valuable insights on managerial decision-making and respective biases of managers when confronted with internal and external ideas in open innovation. In this line, the presented investigation suggests as the first possible downsides of open innovation for the recognition of employees' ideas, addressing a series of consequences for organizations and especially their internal innovation capabilities. Consequently, the present findings stress the importance of future investigations on managerial decision-making in open innovation (see also chapter 11.4.2 *Outlook Further Research*).

### **11.3 Practical Implications**

For practitioners, the present research identifies relevant patterns of managerial decision-making and respective biases of managers regarding the evaluation and selection of ideas within open innovation. The findings suggest a strong preference of managers for ideas from customers over ideas from employees leading to a general sponsorship of external ideas. Moreover, the current research is part of a set of investigations that strive for relevant insights into the determinants of the identified *pro-customer bias*, to detect organizational actions to mitigate respective behavior tendencies. In the following paragraphs, the practical implications of the present findings are outlined in detail.

#### **11.3.1 Creating Awareness for Managers' Pro-Customer Bias and Its Consequences**

The study findings show that inviting external idea providers into innovation processes might have negative consequences for the assessment and recognition of internal ideas. Given the identified *pro-customer bias* of managers, this research shows that internal ideas can become a victim of a strong sponsorship of external knowledge, regardless of the ideas' qualities: confronting managers with customers' and employees' ideas lead to a systematic crowding out of internal ideas in selection processes. The findings show that managers' perception of employees' relatively lower competences in the creation of original and more importantly, desirable ideas might determine the identified *pro-customer bias* of executives. Based on construal level and reason-based choice theories, the present research provides theoretical explanations regarding the

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impact of open innovation and more specifically, the integration of external knowledge as idea sources on the evaluation and selection of internal and external ideas. One of the most simplest argumentations to explain the sponsorship of external contributions in open innovation, lies in the concept and more precisely, managements' justification for the implementation of an open innovation model itself: coming from the notion that (isolated) corporate innovative capabilities and related, the innovativeness of employees within the company is limited (e.g., Katz & Allen, 1980; 1982), opening of innovation processes by an integrating external resources is argued to increase the innovation potential and performance of companies (Chesbrough, 2003; Chesbrough, 2006; Homfeldt, Rese, & Simon, 2019; Laursen & Salter, 2006). Especially incorporating customers' knowledge into innovation processes has a long tradition in product development, highlighting the value of customers' input as experts for desirable and hence profitable products (e.g., Urban & von Hippel, 1988; von Hippel; 1986). From this viewpoint, "outsiders", and especially customers' knowledge might be estimated with a higher value than internal inputs, regardless of the true quality of the respective contributions.

Within the present set of investigations, managers were exposed to internal and external ideas at the same time, allowing direct comparisons and judgments in the evaluation and selection of ideas. Only a minority of today's corporate open innovation activities, such as the crowdsourcing platform of SBB, address both customer and employees simultaneously to provide feedback and ideas for new product development (Mrass, Peters, & Leimeister, 2017; Troll & Blohm, 2017). Outsourcing corporates' innovation activities to external entities on independent platforms can be suggested to strengthen managers' strong attention to external contributions and by doing so, their preference for external input. Moreover, the allocation of innovation tasks to contributors outside the company might negatively affect the recognition of internal ideas by the management. This lack of recognition and consideration of employees' ideas can have several consequences, introducing a vicious cycle in the evaluation and selection of internal and external ideas, as explained following: even if ideas from employees are similar or even higher in quality, managers systematically prefer external ideas. The *pro-customer bias* of managers in the selection of ideas for further development increases significantly the number of new products based on ideas from outsiders. Given a higher proportion of products based on external knowledge, more ideas from outsiders can statistically be expected as successful. In turn, the fact of



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higher success rates supports managers' initial assumptions that incorporating ideas from external sources promote the innovativeness and hence, the overall company's performance significantly. From an employees' point of view, the perception that managers prefer external ideas and do not recognize or even reject ideas from internal origin, impacts negatively their motivation to contribute to the company's innovation efforts (e.g., Bammens, 2016; Cohen, 2007). In consequence, employees who are less emotionally involved in the innovation outcome will provide lower-quality ideas, which in turn confirm executives' prejudice that employees might not be able to create original or novel ideas within new product development. As recent research revealed, employees willing to present innovative ideas to the management are forced to take advantage of idea promoting communication, micropolitical strategies and influencing techniques, in order to positively impact managers' evaluation and consideration of ideas (Elsbach & Kramer, 2003; Lu et al., 2019; Sethi, Iqbal, & Sethi, 2019). Addressing managers' main criteria for the overall evaluation of new product ideas (see also study 1), such as highlighting the novelty and especially desirability of a product, can facilitate the recognition of internal ideas.

Research suggests that the internal acceptance of open innovation models is crucial for the success of innovation activities since a company's employees are responsible for the incorporation and implementation of external knowledge (e.g., Mrass, Peters, & Leimeister, 2017). However, as previously mentioned, allocating innovation activities to external resources can result in perceived threat, lower appreciation and acceptance from an employees' point of view (Mrass, Peters, & Leimeister, 2017). For this reason, managers need to be aware of the downsides of open innovation and in particular, a strong external and more precisely, customer focus within the selection of ideas. Furthermore, companies need to take concrete actions on an individual and organizational level to mitigate the identified *pro-customer bias* in the evaluation and selection of innovation ideas to support employees' innovation efforts. Given the importance of an internal culture for innovation, the next paragraph outlines initial research insights on organizational and personnel conditions that support internal innovation efforts in companies.

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### 11.3.2 Creating a Culture for Innovation within the Company

This research provided theoretical and empirical evidence on managers' *pro-customer bias* within the evaluation and selection of ideas in new product development, resulting in several negative consequences on employees' motivation and ability to provide innovative ideas. As revealed in the qualitative study of this investigation, various activities on an individual and organizational level can be performed to foster a culture of innovation in a company. Research revealed that especially an empowering leadership style as well as a culture of organizational learning to be crucial for the success of open innovation (e.g., Naqshbandi & Tabche, 2018; Zhang & Bartol, 2010). Based on a definition of Naqshbandi, Tabche, and Choudhary (2019), empowering leadership style can be "characterized by the empowerment of followers by reposing trust in them and providing them autonomy to self-manage their self-set goals" (Naqshbandi, Tabche, & Choudhary, 2019, p. 1; see also Arnold et al., 2000; Zhang & Bartol, 2010). Confirming these notions, the qualitative investigation of the present research found managers' ability for empowerment to be crucial for internal innovation. In the study, participants suggested that managers should motivate employees for innovation, empower them by providing physical resources (e.g., space, time, and freedom to innovate) as well as show a strong mistake tolerance to support internal innovation. In this context, empowering leadership does not only address those employees who provide ideas but also decision-makers who are responsible for the selection of ideas. Empowering leadership and in this regards, leaders' trust is manifested "by trusting the followers' ability to evaluate opportunities correctly and to effectively incorporate the outcomes of such opportunities into the organization's processes (Naqshbandi, Tabche, & Choudhary, 2019, p. 3; see also Bligh, 2017; Burke et al., 2006; Tirabeni et al., 2015; Whelan, Parise, De Valk, & Aalbers, 2011). Arguing that managers' *pro-customer bias* can be caused by reason-based choice and anticipatory regret behavior (see chapter 4.2 *Managers' Pro-Customer Bias – A Reason-Based Choice Perspective*; also Connolly & Reb, 2012; Halamish & Liberman, 2017; Reb, 2008; Simonson, 1989) providing decision-makers with trust could reduce risk-avoiding decision-making. Consequently, managers need for decision justification, and hence, their strong preference for customers' ideas (as a safe option) could be mitigated by a respective leadership style.

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Based on the previous assumptions, that managers' *pro-customer bias* leads to a lower perceived appreciation of internal ideas, managers should generally adjust their attitude towards an encouraging culture for employee-driven innovation (Simula & Vuori, 2012). Executives should to motivate employees to submit their ideas and provide them with a feeling of being valued as an essential source of knowledge for the company (Boudreau & Lakhani, 2011). Lately, establishing collaboration and innovation platforms for internal usage has become very popular to support employees' innovation activities. For instance, companies such as SAP, Siemens, McKinsey or SBB successfully implemented internal innovation platforms to gather internal knowledge, support the idea generation and employees' innovation-related networking throughout the company (e.g., Benbya & Van Alstyne, 2011; Mrass, Peters, & Leimeister, 2017).

When it comes to the implementation of internal innovation ideas, practitioners and scholars frequently mention the importance of failures and a related learning culture in organizations. As the qualitative study of the present research revealed, managers suggest that a positive failure-culture and the encouragement of employees to experiment and test innovative concepts can foster the performance of internal innovation processes (see chapter 10 *Qualitative Study: Managerial Activities to Promote the Internal Innovation Capabilities of Employees*). In this regard, recent research found especially the construct of perceived psychological safety to be associated with individual risk-taking, learning and proactive behavior as antecedents of organizational learning and performance (Rhaim & Amara, 2019; Weinzimmer & Esken, 2017). Creating an environment of psychological safety is highly dependent on leaders' characteristics, promoting either a culture of blame or learning (Rhaim & Amara, 2019). Consequently, establishing a culture of failure and learning requires a rethinking of existing management and leadership styles and more importantly, higher degrees of risk-taking and mistake tolerance as preconditions for internal innovation success.

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## 11.4 Limitations & Outlook for Further Research

### 11.4.1 Methodological Limitations

The present research is subject to several limitations that suggest directions for future investigations on managers' differentiated evaluation and selection of ideas within open innovation and in particular, the identified *pro-customer bias*. Methodological limitations can be categorized into four objects of consideration: 1. *Scenario-specific limitations*, 2. *Study Variables*, 3. *Overall Study Design and Sample*, and 4. *Generalization of Results*.

#### *1. Scenario-specific limitations*

In the present set of investigations, customers and employees were introduced as idea providers. Hereby, no additional information on the specific background of each group (customer and employee) was presented. For this reason, the interpretation of the respective characteristics of the individual idea providers had to be carried out by the study participant. In order to exclude possible confounding effects due to a misinterpretation of respective attributes of the idea providers, further studies could provide more detailed information, as, e.g., on the hierarchical relationship between the employee and the participant's role as innovation manager within a B2C company.

In the central studies of this research (studies 2a – 4) participating executives were introduced to the scenario of a pillow company running innovation contests with customers and employees to generate ideas for innovative pillows. The scenario, as well as the stimulus material within the choice paradigm in study 4, is based on the research of Hofstetter, Dahl, Aryobsei, and Hermann (2019). However, the application of the present research's findings to other new product development contexts might be limited. Therefore, further studies should consider various scenarios to test the robustness of effects.

#### *2. Study Variables*

For the present research, three new instruments were developed to measure managers' assessment of customers' and employees' ideation competencies (*CDI-*, *CFI-*, and

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*COI-Index*). Even though the four-item based *CDI-Index* (the measurement of managers' perception of customers' and employees' relative competencies to provide desirable ideas) showed good performances regarding the internal validity and reliability in various samples of the present investigation, further evidence on its quality, especially on the external validity of the construct need to be derived. Furthermore, the *COI-* and the *CFI-Index* (measuring managers' perception of the relative originality and feasibility ideation competencies) consist of only one item each. Future research should further develop the measurement scales to test the internal validity of the construct. Also, within the present research, participants' response on a dichotomous scale, resulting in a low statistical variance.

The three developed variables represent pairwise comparisons between customers' and employees' ideation competencies. The technique of comparative judgments has a long tradition as well as compelling advantages in the measurement of personal attitudes and preferences (Brown & Peterson, 2009; Thurstone, 1927; Thurstone, 1959). However, the application of comparative measures results in relative interpretations (e.g., *customers are better than employees in the creation of original ideas*) and deny absolute evaluations (*customers are very good in the creation of original ideas*) of individual attitudes, leading to lower statistical power within analyses. Consequently, further investigations should consider not only comparative but also absolute measurements of managers' perception of customers' and employees' ideation competencies.

Within the pre-selection of ideas, study participants were asked to select either ideas from a company's customers or employees. In this context, managers responded on a binary scale (1 = *ideas from customers*; 2 = *ideas from employees*). Due to the dichotomous nature of the dependent variable and hence reduced statistical variance within the data, an only limited set of statistical analyses was performed.

### 3. Overall Study Design and Sample

The findings of the present research are mainly based on correlational studies, initially proofing the appearance of the *pro-customer bias* of managers in new product development settings. Within a broad set of investigations, the replicability of the identified effects was revealed, and further empirical and theoretical analyses

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regarding underlying psychological mechanisms were provided. Therefore, future studies should consider experiments, manipulating managers' perceptions on customers' and employees' ideation competencies to uncover their impact on manager pre-selection and choice-behavior in detail (see also chapter *11.4.2 Outlook Future Research*).

The studies were conducted using two (online) panels, consisting of executives from the US and German-speaking countries in Europe. In order to validate the identified effects in the online scenarios and to ensure the external validity of the findings, future scholars should consider field studies for further investigations on the *pro-customer bias* in new product development.

#### *4. Generalization of Results*

The present research investigates managerial decision-making within new product innovation, based on a B2C product development scenario. Although, participants reported similar experiences with the identified *pro-customer bias* in a B2B environment, the results of the present study are not directly applicable to B2B innovation processes. In order to generalize this study's findings, additional evidence needs to be revealed within concrete B2B contexts, addressing more sophisticated product development and customer integration processes.

The outlined limitations of this research lead to various opportunities for future investigations. The next chapter addresses unanswered questions and possibilities for further explorations.

### **11.4.2 Outlook Further Research**

The present research provided initial theoretical and empirical evidence on managers' *pro-customer bias* within the selection of innovation ideas in new product development. In this regard, existing studies on construal level, reason-based choice, and anticipatory regret theory have provided a conceptual framework to explain managers' strong preference for customers' over employees' ideas. The current research seeds various opportunities for future research that are addressed in this chapter.

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Firstly, future research should continue the investigation of the *pro-customer bias* and the robustness of managers' strong preferences for customers' over employees' innovation ideas, by applying various contexts in B2C as well as B2B product and service development. As mentioned in the previous chapter, in the present set of investigations, study participants were introduced in B2C settings and more specifically, in the fictive scenario of an innovation context run by a company producing pillows. For this reason, the generalization of results to other context and notably more complex environment, such as in B2B industries is limited.

Secondly, this work documented the *pro-customer bias* of managers and respective theoretical foundations for the first time. Therefore, future studies should focus on additional empirical evidence for the hypothesized underlying psychological mechanisms by conducting experimental studies. The following paragraphs outline possible research designs on the manipulation of (1) construal-levels, (2) risk and anticipatory regret within idea selection and (3) the decision-makers social context, to reveal additional empirical evidence on the psychological causalities of the identified *pro-customer bias*.

#### *(1) Manipulation of Construal Levels*

In line with construal level theory, psychological distance to a stimulus or event influences one's originality, desirability, and feasibility evaluations (e.g., Mueller, Melwani, & Goncola, 2014; Trope & Liberman, 2010). Within the present set of investigations, customers are argued to be more distant to the decision-maker than employees, resulting in higher construal levels. Consequently, managers perceive customers in comparison to employees as more competent when it comes to the development of original and/or desirable ideas, whereas employees are expected to be more adept in the creation of feasible ideas. Future studies should focus on the manipulation of construal levels and more specifically, the psychological distance of the decision-maker to the idea providers, in order to deliver further empirical evidence on managers' assessments of idea providers' competencies as well as their individual decision-making behavior (Trope & Liberman, 2010; Wiesenfeld, Reyt, Brockner, & Trope, 2017).

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Another approach to providing additional insights on managers' *pro-customer bias* based on construal level theory is to alter construal levels by manipulating managers' focus within the evaluation and selection process. Assessing and varying managers' customer perspective-taking (Grant & Berry, 2011; Hattula, Herzog, Dahl, & Reinecke, 2015) is one option to reduce the psychological distance between the decision-maker and customers as idea providers. Consequently, perceived proximity to the customer could mitigate managers' perceived differences between customers and employees as idea providers leading to a diminishment of the identified *pro-customer bias*.

### *(2) Manipulation of Risk and Anticipatory Regret within Idea Selection*

When confronted with uncertainty, managers look for information to guide their choice and to reduce the probability of possible adverse outcomes of their decisions (Conelly & Reb, 2012; Halamish & Liberman, 2017). As research revealed, this behavior strongly impacts executives' risk tolerance and risk-taking, as observable in, e.g., investment decisions (Faff, Mulino & Chai, 2008; Grable 2000; Hallahan, Faff & McKenzie, 2004). For instance, in their study, Bailey and Kinerson (2005) found the manipulation of individual experiences and anticipatory regret behaviors by providing additional information on previous decision-making outcomes to impact on the investment decisions of managers significantly. Consequently, manipulating managers' risk perception and hence, anticipatory regret behavior (as, e.g., by exposing managers to sales rates of previous product ideas from customers vs. employees) could influence executives' *pro-customer bias* within the selection of employees' and customers' ideas.

In this line, another approach to manipulate managers' risk perception and anticipatory regret behavior is to address managers' expectations directly. According to expectation-disconfirmation theory (Oliver 1977), a systematic preference for customers' over employees' ideas could also be a result of previous expectation management. The manipulation of executives' expectations on respective customers' and employees' idea provider characteristics and possible innovation outcomes could reduce managers' uncertainty and hence, also function as a possible debiasing mechanism.



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### *(3) Manipulation of Decision-Makers Social Context*

In the present studies, participants were asked to imagine themselves in the role of innovation managers, responsible for the evaluation and selection of innovation ideas in an idea contest of the outlined B2C company. As recent research revealed, the decision-maker's role (social context) can alter the assessment of innovative ideas (Mueller, Melwani, Loewenstein, & Deal, 2018). In their study, Mueller, Melwani, Loewenstein, and Deal (2018) showed that decision-makers' roles could evoke economic mindsets, which reduce creativity (but not usefulness) perception of ideas. Consequently, the social context of managers can impact the evaluation and selection of ideas in product development. Previous research from advice taking underlines the finding from Mueller, Melwani, Loewenstein, and Deal (2018). For example, a study from Jonas and Frey (2003) revealed that individuals' responsibilities within a decision-making process can impact the information search behavior: whereas personal decision-makers show an engagement in biased information searches (such as confirmation bias), advisors were observed to perform a more balanced information search (Jonas & Frey, 2003). Further research showed that not only the information search, but also the focus within the decision-making process differentiate dependent on one's social role within the situation (Bonaccio & Dalal, 2006; Danziger, Montal, & Barkan, 2012; Lu, Liu & Fang, 2016; Xu, Xie, & Lu, 2013; Reyt, Wiesenfeld & Trope, 2016). In this context, a set of investigations from Xu, Xie, and Lu (2013) uncovered that the decision target strongly influences individuals' decision behavior, resulting in a desirability focus when deciding for others and a feasibility orientation in decisions for themselves.

Thirdly, as addressed in the practical implications, the present research identifies, measures for management to prevent or mitigate the documented *pro-customer bias*. The conducted qualitative study (see also chapter 10 *Qualitative Study*) as well as recent literature on innovation management revealed the corporate culture has a massive impact on the recognition of internal and external ideas as well as respective outcomes of innovation initiatives (e.g., Elsbach & Stigliani, 2018; Garcia-Granero, Llopis, Fernandez-Mesa, & Alegre, 2015, Naqshbandi & Tabche, 2018; Naqshbandi,

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Tabche, & Choudhary, 2019) More work is needed to explore the moderating and mediating effects of decision-makers corporate culture on the identified *pro-customer bias*. In particular, given existing studies on the positive impact of empowering leadership as well as organizational learning cultures on open innovation outcomes (e.g., Abdi et al.,2018; Janka, Heinicke & Guenther, 2019; Naqshbandi & Tabche, 2018), it seems to be worthwhile to examine possible diminishing or mediating effects of respective cultural backgrounds on the identified *pro-customer bias*.

Fourthly and related, another potential for future research is the investigation of managers' corporate background. Arguing that there might be differences within managers' treatment of internal and external ideas, based on their work and company-specific experiences suggests directions for future investigations. For this reason, further studies on managers' *pro-customer bias* should focus on the impact of companies' characteristics, such its environment and structure (e.g., B2C- vs. B2B, branches, size of the company) as well as managers' individual work environments (e.g., working department, hierarchy level corporate culture) on managers' decision-making behavior within the selection of internal and external innovation ideas.

Fifthly, the present research identifies a general *pro-customer bias* in the selection of innovation ideas for new product development and uncovers possible determinants of the preferences for customers' over employees' ideas. The conducted studies revealed first, that managers' favor for customers' over employees' ideas and second, that managers' belief that customers are more competent in the creation of desirable ideas as the main predictor for the respective *pro-customer bias* within the idea selection. By doing so, the present investigation focuses mainly on determinants beneficial for a customer-oriented selection behavior and does not cover the examination of conditions that might inhibit or even invert the identified *pro-customer bias* in new product development. When it comes to the rejection of external knowledge for innovation, the most frequently mentioned bias is the *not invented here syndrome* (NIH; Antons & Piller, 2015; Katz & Allen, 1980; Katz & Allen, 1982; Reitzig & Sorenson, 2013). Existing research on the *not invented here syndrome* provided evidence on an attitude-based bias towards knowledge (e.g., information, tool, technologies or ideas) of external origin (e.g., Antons & Piller, 2015; Katz & Allen, 1982; Laursen & Salter, 2006). However, in line with construal level, reason-based choice and anticipatory regret theories, the present set of investigations showed the contrary effect that

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decision-makers prefer the external input of customers over ideas from employees. Given these mixed findings on the incorporation of external knowledge, future research should consider qualitative investigations with practitioners or case studies to identify contexts and conditions, in which decision-makers prefer ideas from customers over employees or vice versa.

In summary, research on open innovation and in particular managerial decision-making with focus on the evaluation and selection of ideas from various sources has substantial implications for managerial and academic practice. Further investigations and especially field-studies are needed to fully understand the determinants and conditions of managers' *pro-customer bias* within the selection of innovation ideas. In this context, the present research provides initial documentation of executives' *pro-customer bias* for further examinations on managerial decision-making in open innovation and measures to promote internal innovation capabilities and the recognition of internal ideas.

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**13 Appendix**

### 13.1 Summaries of Relevant Studies

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Chan, Yim, and Lam (2010)	Journal of Marketing	What are the effects of customer participation on value creation and satisfaction for both employees and customers?	Correlative study	N = 349 pairs of customers and employees of a global acting financial institution in Hong Kong and the US	<ul style="list-style-type: none"> <li>– Customer value creation (relational and economic) mediates the relationship between customer participation and customer satisfaction; Employee value creation mediates the influence of customer participation on employee job satisfaction</li> <li>– Power distance moderates significantly the effect of customer participation and employee and customer relational value</li> <li>– The authors suggest that customer participation brings many benefits, but also can enhance employees job stress and their satisfaction to a certain extent</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Chang and Taylor (2016)</b>	Journal of Marketing	When does customer participation in new product development pay off?	Meta-analytical approach	Review of 104 studies with in total n = 36004 participants	<ul style="list-style-type: none"> <li>– Positive direct and indirect effects of customer participation in early innovation stages on the financial performance of new products</li> <li>– In the development phase, customer participation can slow down the time to market, leading to lower financial performances of new products</li> </ul>
<b>Cui and Wu (2015)</b>	Journal of the Academy of Marketing Science	What are antecedents and outcomes of customer involvement in new product performance?	Correlative study	N = 245 participants that are members of the Product Development and Management Association (PDMA)	<ul style="list-style-type: none"> <li>– Differentiation of three different types of customer participation in new product development (customer involvement as an information source (CIS), as co-developers (CIC) or as innovators (CIN))</li> <li>– Identification of relevant antecedents and outcomes of these three customer participation modalities</li> <li>– E.g., Customer involvement as an information source or co-developers is highly dependent on inter-functional coordination</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Fuchs, Prandelli, and Schreier (2010)</b>	Journal of Marketing	How does customer empowerment affect customers' product demands?	Four experimental studies	Study 1 : n = 264 students Study 2: N = 128 participants from an online panel Study 3: n = 203 students Study 4: N = 280 participants from an online panel	<ul style="list-style-type: none"> <li>– Concerning psychological ownership theory, the study found customers, who select products to be marketed, to show a greater demand for the respective products than customers who are not involved in the product selection process (e.g., regarding purchase intention)</li> <li>– Product-demand effect is highly dependent on the outcome of the selection process: the effect diminishes if the selection outcome does not represent customers' preferences or if customers do not feel to have relevant competencies to make reasonable decisions</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Fuchs and Schreier (2011)	Journal of Product Innovation Management	How do customers perceive customer empowerment strategies?	Two experimental studies	Study 1 : $n_1=190$ undergraduate students, $n_2 = 166$ and $n_3 = 160$ nonstudent sample Study 2: $n_1 = 92$ students, $n_2 = 158$ and $n_3 = 153$ (mixed sample)	<ul style="list-style-type: none"> <li>– Customer empowerment strategies conceptualized as customers' possibilities to create ideas for new product designs or to select/ vote on new product designs</li> <li>– Investigation of customer empowerment strategies in the context of t-shirts, furniture, and bicycles; no significant differences in the effects of customer empowerment strategies within these product categories</li> <li>– Both Customer empowerment strategies lead to increased levels of customer orientation from an outside view, more positive attitudes towards a company and a stronger willingness to buy products of companies that enable customer participation in new product development</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Schreier, Fuchs, and Dahl (2012)</b>	Journal of Marketing	How do user generated products affect consumers' perception of a company?	Four experimental studies	Study 1: <i>n</i> = 80 students Study 2: <i>n</i> = 161 consumers from an online panel Study 3: 460 consumers online market research panel Study 4: 99 students	<ul style="list-style-type: none"> <li>– User-generated designs of products enhance customers' perceived innovation ability of a company (effects manifested across several product categories)</li> <li>– Perceived innovation ability was found to explain the effects of user-generated product designs (functional and aesthetic) on purchase intentions, willingness to pay and word-of-mouth</li> <li>– Consumers familiarity with user innovation (as, e.g., when consumers have their own experiences with user-generated designs/concepts) as well as product complexity influence the identified innovation effect</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Gassmann, Kausch, and Enkel (2010)</b>	International Journal of Technology Management	What are the main negative side effects of customer integration in new product development? What are measures to avoid such negative outcomes?	Case Studies and qualitative studies	126 semi-structured interviews with 18 companies	<ul style="list-style-type: none"> <li>– The study revealed various examples of customer integration from different companies and at each stage of the sub-phases of the early innovation stage</li> <li>– Possible negative side-effects of customer integration are derived for every sub-phase</li> <li>– Measures to avoid negative side effects of customer integration are described with examples</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Hofstetter, Aryobsei, and Herrmann (2017)	Journal of Product Innovation Management	To what extent are online consumer votes socially biased by reciprocal voting?	Two correlative studies	<p>Study 1 :  <math>n = 1917</math>  consumers who participated in 87 innovation contests on atizo.com</p> <p>Study 2:  <math>n = 361</math> evaluated ideas from 18 firms that hosted an innovation contest on atizo.com</p>	<ul style="list-style-type: none"> <li>– Investigation on customer voting and especially reciprocity behavior reveals that consumers profit from cooperation within voting situations (e.g., in open innovation/ crowdsourcing activities/ contests)</li> <li>– A quantitative study with companies that hosted respective idea contests revealed that consumer votes do not correspond with managers later assessments of the quality of innovation ideas</li> <li>– Based on these findings, customer votes are highly impacted by consumers' reciprocity behaviors and therefore can be misleading as information basis for an assessment of idea quality and selection of respective proposals</li> </ul>



Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Kristensson, Matthing, and Johansson (2008)</b>	International Journal of Service Industry Management	What are key strategies for the successful involvement of customers in the co-creation of new technology-based services?	One case study	Data collection within one company and four user involvement trials within a total number of $n = 38$ customers	<ul style="list-style-type: none"> <li>– Identification of seven key strategies to involve successfully customers in new product development processes</li> <li>– Seven key strategies: (1) derivation from user situation, (2) derivation from various roles, (3) analytical tools, (4) apparent benefits, (5) non-use of brainstorming, (6) limited expertise and (7) ensuring heterogeneity</li> </ul>
<b>Poetz and Schreier (2012)</b>	Journal of Product Innovation Management	How do user-generated ideas perform in comparison to professionally generated ideas in new product development?	One experimental study	Evaluation of $n = 52$ user ideas by the CEO and Head of R&D of a company producing baby products	<ul style="list-style-type: none"> <li>– Blinded review of ideas from customers and a firm's professionals results in higher ratings of customer ideas in terms of novelty and customer benefit and lower in terms of feasibility</li> <li>– Overall Feasibility ratings for both groups very high</li> <li>– Ideas from customers were more frequently places as the best ideas regarding novelty and customer benefit</li> <li>– Results suggest in contrast to other studies in new product development that customers' ideas can compete with professionals' ideas in the idea generation stage</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Sethi and Iqbal (2008)	Journal of Marketing	Does control through rigorous reviews in stage-gate processes increase inflexibility and hence, learning failures?	One correlative study	N = 120 responsible project managers in new product development	<ul style="list-style-type: none"> <li>– Strict review criteria in stage-gate processes are significantly correlated with project inflexibilities</li> <li>– Frequency of reviews is associated with project inflexibility</li> <li>– Project inflexibility was found to be significantly correlated with post-approval learning failure (failure to acquire new information; failure to integrate information and failure to make changes in plans, based on existing information)</li> <li>– Furthermore, the effect of project inflexibility on learning failure is stronger under conditions of high technological turbulences</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Sethi, Iqbal, and Sethi (2012)	Journal of Marketing	To what extent do new-to-the-firm products face resistance in the review process for approval and can micropolitical strategies of product development teams decrease these resistances?	One correlative study	$N = 114$ managers in new product development	<ul style="list-style-type: none"> <li>– Technology and market newness is positively associated with resistance for approval in the review process</li> <li>– Experiences threat of managers explains the effect of technology newness on resistance and partially of market newness on resistance</li> <li>– The micropolitical strategy of coalition building weakens the positive effect of market newness on resistance;</li> <li>– Framing strategies decrease the positive effect of technology newness on resistance</li> <li>– Product newness and the moderating effect of coalition building and framing increase compromise through resistance</li> <li>– Developing a product in hiding weakens the degree of compromise</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Stevens, Esmark, Noble, and Noble (2017)</b>	Marketing Letters	How do varying levels of control and co-production influence customers' affective responses?	Two experimental studies and one correlative study	Study 1 : <i>n</i> = 314 students Study 2: <i>n</i> = 240 students Study 3: <i>n</i> = 250 participants from an online panel	<ul style="list-style-type: none"> <li>– Cognitive control is associated with positive affect in low co-production situations; cognitive control in high co-production conditions does not increase positive affect</li> <li>– Behavioral control leads to negative affect when customers influence is not perceived in low co-production conditions; there is no influence of behavioral control on affect in high co-production conditions</li> <li>– Decisional control does increase affect in low and high co-production conditions</li> </ul>

Table A1

*Summaries of Relevant Studies on Open Innovation & Customer Integration*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Witell, Kristensson, Gustafsson, and Löfgren (2011)	Journal of Service Management	How does market research, in comparison to co-creation techniques, influence the outcome of idea generation in new product development?	One correlative study and one experiment	Study 1 : $n = 195$ managers of new product development projects Study 2: $n = 50$ customers	<ul style="list-style-type: none"> <li>– The study revealed that using market research techniques in new product development impacts the profits from new offerings</li> <li>– Especially the lead user approach has a significant influence on profits, whereas traditional customer interviews do not</li> <li>– There are significant differences between co-creation and focus group conditions regarding originality and the originality of best ideas in favor of co-creation techniques; furthermore, co-creation conditions show higher ratings of originality of best ideas in comparison to in-depth interview techniques of market research</li> </ul>

Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Berson and Harley (2014)	Journal of Experimental Psychology	How does hierarchical distance between leaders and followers moderate the effectiveness of leaders' behaviors?	One Correlative and two experimental studies	Study 1 : $n = 2206$ employees in a telecommunication company Study 2: $n = 160$ MTurk participants Study 3: $n = 114$ undergraduate psychology students	<ul style="list-style-type: none"> <li>– Hierarchical distance moderates the impact of visionary leadership on job satisfaction</li> <li>– Feedback and mentoring is correlated strongly with job satisfaction when it is provided by lower-level leaders (compared to leaders with a high hierarchical distance)</li> <li>– Hierarchical Distance moderates the effect of message type (concrete vs. abstract messages) on social bonding, organizational commitment and experienced construal misfit as well as group commitment and willingness to volunteer time and effort</li> </ul>
Dale and Arnell (2014)	PLoS One	How can dispositional differences in global/local bias be manipulated?	Five experimental studies	Study 1: $n_1=46$ and $n_2=40$ undergraduate students Study 2: $n_1=45$ and $n_2=39$ undergraduate students Study 3: $n=24$ undergraduate students	<ul style="list-style-type: none"> <li>– Dispositional differences in global/ local biases are stable across time and resistant to manipulation in terms of high or low spatial frequency information</li> <li>– Navon interference scores can be influenced by (to a certain extent) by an exposition of low/high spatial frequency gratings</li> </ul>

Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Freitas, Gollwitzer, and Trope (2004)	Journal of Experimental Social Psychology	How does an abstract or concrete mindset influence one's anticipation and guidance of others' self-regulatory efforts?	Two experimental studies	<p>Study 1: n=120 undergraduate students</p> <p>Study 2: n<sub>1</sub>=97 and n<sub>2</sub>=103 undergraduate psychology students</p>	<ul style="list-style-type: none"> <li>– Participants in an abstract mindset anticipated other's to seek less weakness-based feedback as participants in a concrete mindset</li> <li>– Participants in lower construal levels (concrete mindset) suggest others more likely to seek for strength-based feedback, than participants in higher construal levels</li> <li>– Participants assigned to the abstract mindset condition are suggested to provide more accurate feedback (rather than self-enhancement) in comparison to participants in concrete mindsets</li> <li>– Participants in higher-construal levels considered stronger feedback situations to impact other's long-term goals than immediate emotional responses to the feedback</li> </ul>

Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Liberman and Förster (2009)	Journal of Personality and Social Psychology	How does one's construal level affect egocentric psychological distance?	Four experimental studies	<p>Study 1: <math>n = 96</math> undergraduate students and guests from a student café</p> <p>Study 2: <math>n_1 = 130</math>, <math>n_2 = 120</math>, <math>n_3 = 112</math> undergraduate students</p> <p>Study 3: <math>n_1 = 120</math> students and <math>n_2 = 129</math> random people</p> <p>Study 4: <math>n = 126</math> undergraduate students</p>	<ul style="list-style-type: none"> <li>– Global processing makes people estimate larger psychological distances respective time, space, social distance and hypothetical situations in contrast to local processing</li> <li>– Psychological distance estimations are only affected by different construal levels in terms of distance to the experienced self (here and now) and not related to other reference points</li> </ul>



Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Lu, Yie, and Xu (2012)</b>	Personality and Social Psychology Bulletin	How does a decision for oneself or others differ in its weight on desirability or feasibility?	Five experimental studies	Study 1: $n_1= 53$ and $n_2= 44$ students Study 2: $n= 56$ undergraduate students Study 3: $n_1= 41$ and $n_2= 42$ participants	<ul style="list-style-type: none"> <li>– In line with construal level theory, studies revealed that individuals who decide for others focus more likely on desirability than on feasibility (in comparison to decisions for oneself)</li> <li>– Differences between decisions for oneself and others have been found for preferences in the decision-making process, information seeking and information recall after one's decision</li> <li>– Results indicate that the target of the decision strongly influences decision-making behavior</li> </ul>

Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Mueller, Melwani, and Goncola (2011)	Psychological Science	Does uncertainty promote bias against creativity?	Two experimental studies	<p>Study 1: n = 73 undergraduate students</p> <p>Study 2: n = 140 undergraduate students</p>	<ul style="list-style-type: none"> <li>– Uncertainty priming does not affect explicit biases against creativity</li> <li>– Participants in an uncertainty condition showed an implicit bias against creativity (in comparison to the practicality and participants in the baseline condition); Participants in the baseline condition showed a greater tendency towards creativity in contrast to practicability</li> <li>– Participants with a higher motivation to reduce uncertainty showed a greater implicit bias against creativity in comparison to practicability (compared to participants in the high-tolerance-for-uncertainty condition); Participant with high tolerance regarding uncertainty showed higher creativity ratings (in comparison to people with a high motivation to reduce uncertainty)</li> <li>– Mediation analysis revealed that people with a high tendency towards uncertainty-reduction showed greater biases against creativity, leading to lower creativity ratings &gt; people with a strong bias against creativity are not able to recognize creative ideas</li> </ul>

Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
Mueller, Wakslak, and Krishnan 2014	Journal of Experimental Social Psychology	How does one's construal level affect the perception of creativity?	Three experimental studies	Study 1: $n = 168$ MTurk participants Study 2: $n = 82$ lab participants Study 3: $n = 73$ lab participants	<ul style="list-style-type: none"> <li>– Manipulations of construal level affect the evaluation of creative ideas: People in lower construal levels evaluate creative ideas lower than people in higher construal levels</li> <li>– Construal level affect the evaluation of creative, but not of ideas with low creativity (non-creative ideas are not supposed to be more creative)</li> <li>– Uncertainty mediates the correlation between one's construal level and evaluation of creative ideas</li> </ul>
Polman and Emich (2011)	Personality and Social Psychology Bulletin	To what extent differ decisions for others and decisions for oneself in the degree of creativity of provided solutions?	Four experimental studies	Study 1: $n = 262$ students Study 2a: $n = 65$ students Study 2b: $n = 516$ students Study 3: $n = 137$ students	<ul style="list-style-type: none"> <li>– Participants drawing an alien for a short story that is supposed to be written by themselves or others, showed more creative drawings when it was for someone else</li> <li>– Manipulation of social distance by the amount of provided ideas, altered one's construal level and hence, the creativity of generated ideas of participants;</li> <li>– Decisions for others are more creative than decisions for oneself</li> </ul>

Table A2

*Summaries of Relevant Studies on Construal Level Theory, Creativity, Desirability & Feasibility*

Author(s)	Journal	Research Question(s)	Methodological Approach(es)	Participants	Key Findings
<b>Reyt and Wiesenfeld (2015)</b>	Academy of Management Journal	How does role integration behaviors affect one's construal level?	One archival study, two experiments and one field study	Study 1: <i>n</i> = 119 751 emails from 236 employees Study 2: <i>n</i> = 100 online participants Study 3: <i>n</i> = 105 online participants Study 4: <i>n</i> = 500 online participants	<ul style="list-style-type: none"> <li>– The hierarchical level is significantly correlated with one's construal level</li> <li>– Role integration behavior is associated with one's construal level (abstractness of email conversation)</li> <li>– Role integration behavior impacts one's construal level</li> <li>– Higher construal levels enhance exploratory learning (in a more distant search behavior)</li> <li>– Role integration behavior leads to higher construal levels in comparison to role segmentation behavior</li> </ul>

Table A3

*Summaries of Relevant Studies on Managerial Decision-Making & Innovation*

<b>Author(s)</b>	<b>Journal</b>	<b>Research Question(s)</b>	<b>Methodological Approach(es)</b>	<b>Participants</b>	<b>Key Findings</b>
<b>Dane and Pratt (2007)</b>	Academy of Management Review	What is intuition and what is its role in managerial decision-making?	One conceptual study	4	<ul style="list-style-type: none"> <li>– Development of a common definition for intuition as a “(1) nonconscious process (2) involving holistic associations (3) that are produced rapidly, which (4) result in affectively charged judgments.” (Dane and Pratt 2007, p.36)</li> <li>– Differentiation between two information processing systems</li> <li>– Conceptualization of intuition concerning its four central characteristics</li> <li>– Managerial decision-making and its implications</li> </ul>
<b>Fischer and Rohde (2013)</b>	American Journal of Management	What are the main resistances of managers to innovation and how to overcome it?	One qualitative study	Interviews with Employees of a utility company	<ul style="list-style-type: none"> <li>– Identification of relevant management barriers to innovation and organizational change (resistance to ideas and resistance to implementation)</li> <li>– Development of measures to overcome identified resistances of managers concerning innovative ideas and the implementation of ideas</li> </ul>

## 13.2 Screenshots of Empirical Study 1



Figure A1. Screenshot Empirical Study 1: Introduction Page 1.



Figure A2. Screenshot Empirical Study 1: Introduction Page 2.

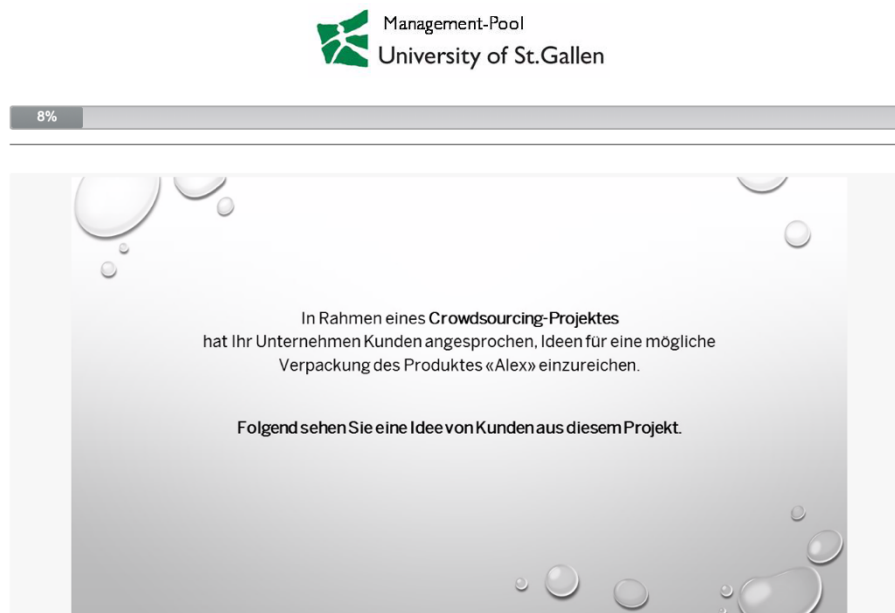


Figure A3. Screenshot Empirical Study 1: Introduction Page 3.



Figure A4. Screenshot Empirical Study 1: Task Description.

21%

**Verpackungsidee**

Die Wasserflasche wird in einem zylindrischen Karton geliefert  
In den Karton ist auf der Oberseite ein Kompass integriert, den man herausnehmen kann  
Mit der Wasserflasche wird ein Guide geliefert, in dem Wanderwege und spannende Ausflugsziele beschrieben sind

Bitte bewerten Sie die gezeigte Produktverpackung anhand der folgenden Merkmale:

	gering							hoch
Machbarkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nützlichkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Praktikabilität	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kreativität	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neuartigkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Einzigartigkeit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Begehrtheit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure A5. Screenshot Empirical Study 1: Evaluation of Innovation Ideas 1.



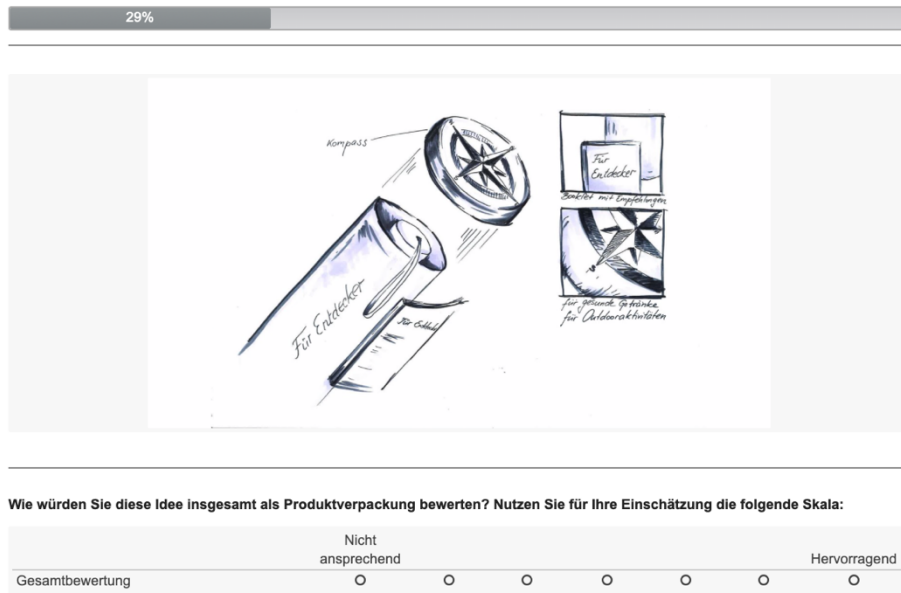


Figure A6. Screenshot Empirical Study 1: Evaluation of Innovation Ideas 2.

### 13.3 Screenshots of Empirical Study 2a

7%

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Dear MTurk User:

Thank you for participating in **my brief study** on product design. You contribute substantially to my PhD studies at the University of St.Gallen (Switzerland) by answering the following questions. The survey will take around **3-5 minutes**.

Please consider, that there will be a short pre-screening prior to the actual survey, since we need to check for specific criteria in our study.

In case you have any questions regarding the survey, please do not hesitate to contact me: [laura.braun@unisg.ch](mailto:laura.braun@unisg.ch).

Best regards  
Laura Braun



Please click on the "continue" button to start the survey.

Continue

Figure A7. Screenshot Empirical Study 2a: Introduction Page.

14%

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**How many hours do you work on average per week?**  
(If "none", please indicate "0")

---

**In your current job position: For how many employees do you have direct managerial responsibility?**  
(If "none", please indicate "0")

---

**Do you have budget or project responsibility within your organization?**

Yes  No

Continue

Figure A8. Screenshot Empirical Study 2a: Filter Questions for the Selection of Participants for the Management Study.

57%

**What is your gender?**

female  male

**Age**

**What is your country of citizenship?**

USA  
 Canada  
 India  
 Other

**What is your highest educational level?**

Less than high school  
 High school graduate  
 Associate degree  
 Bachelor's degree  
 Master's degree  
 Ph.D., law or medical degree

Continue

Figure A9. Screenshot Empirical Study 2a: Scenario Description.

29%

**In your role as an innovation manager:**  
 Please respond to what extent do you agree with the following statements:

	Completely disagree						Completely agree
Employees can tell better than customers what can be a successful new product or service in the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customers are more able than employees to come up with ideas that are useful for the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees are better than customers when it comes to the identification of market needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customers know better than employees what the market really demands.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Continue

Figure A10. Screenshot Empirical Study 2a: CDI-Index Questions.

79%

**In your current job position: How much are you involved in the following tasks within your company?**

	1 = not at all	2	3	4	5 = belongs to my main job responsibilities
Development of Innovation Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluation of Innovation Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of Innovation Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Management of Innovation Projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**How much customer contact do you have in your position?**

1 = never     
  2 = very rarely     
  3 = rarely     
  4 = occasionally     
  5 = frequently     
  6 = very frequently     
  7 = on a daily basis

[Continue](#)

Figure A11. Screenshot Empirical Study 2a: Sociodemographic Background.

64%

**In what department are you working in your company?**

Marketing     
  Innovation     
  Sales     
  Organizational Strategy     
  Operations     
  Finance     
  Human Resources     
  Other

**In which hierarchy level would you consider your current job position?**

- Top Management/ Member of the Board
- General Management
- Regional Management
- Supervisor
- Office Manager
- Team Manager
- Project Manager

[Continue](#)

Figure A12. Screenshot Empirical Study 2a: Work-Related Questions.

79%

---

**In your current job position: How much are you involved in the following tasks within your company?**

	1 = not at all	2	3	4	5 = belongs to my main job responsibilities
Development of Innovation Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluation of Innovation Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of Innovation Ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Management of Innovation Projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

**How much customer contact do you have in your position?**

1 = never

2 = very rarely

3 = rarely

4 = occasionally

5 = frequently

6 = very frequently

7 = on a daily basis

Continue

Figure A13. Screenshot Empirical Study 2a: Questions Regarding Participants Involvement in Corporate Innovation Activities.

86%

---

**Based on your personal expertise:**  
Please answer the following last questions in general.

---

**Who do you think has more original ideas? (i.e., in a sense of being novel, creative, or unique)**

Consumers of a company


Employees of a company

---

**Who do you think has more feasible ideas? (i.e., in a sense of being realizable)**

Consumers of a company


Employees of a company

---

**Who do you think has more useful ideas? (i.e., in a sense of being valuable or providing benefit for a customer)**

Consumers of a company


Employees of a company

Continue

Figure A14. Screenshot Empirical Study 2a: COI-Index and CFI-Index Questions.

### 13.4 Screenshots of Empirical Study 3a

8%

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Dear MTurk User.

thank you for participating in **my short study** on product design. You contribute substantially to my PhD studies at the University of St.Gallen (Switzerland) by answering the following questions. The survey will take around **3-5 minutes**.

Please consider, that there will be a short pre-screening before the actual survey, since we need to check for specific criteria in our study.

In case you have any questions regarding the survey, please do not hesitate to contact me: [laura.braun@unisg.ch](mailto:laura.braun@unisg.ch).

Best regards  
Laura Braun



Please click on the "continue" button to start the survey.

Figure A15. Screenshot Empirical Study 3a: Introduction Page.

8%

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**How many hours do you work on average per week?**  
(If "none", please indicate "0")

---

**In your current job position: For how many employees do you have direct managerial responsibility?**  
(If "none", please indicate "0")

---

**Do you have budget or project responsibility within your organization?**

Yes  No

Continue

Figure A16. Screenshot Empirical Study 3a: Filter Questions for the Selection of Participants for the Management Study.

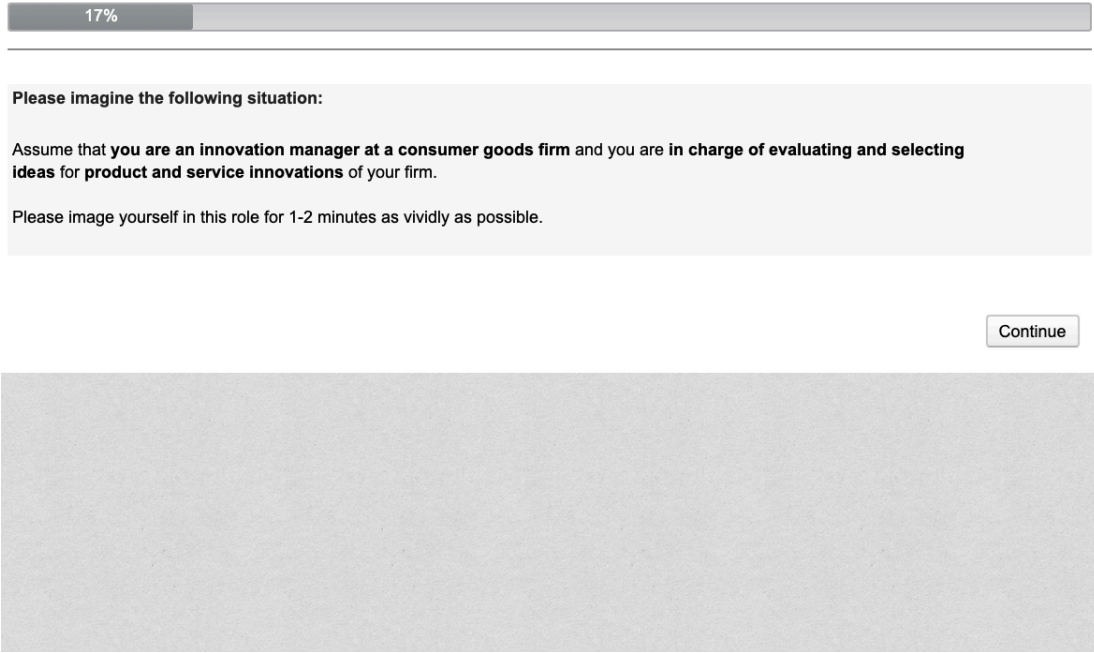


Figure A17. Screenshot Empirical Study 3a: Scenario Description.

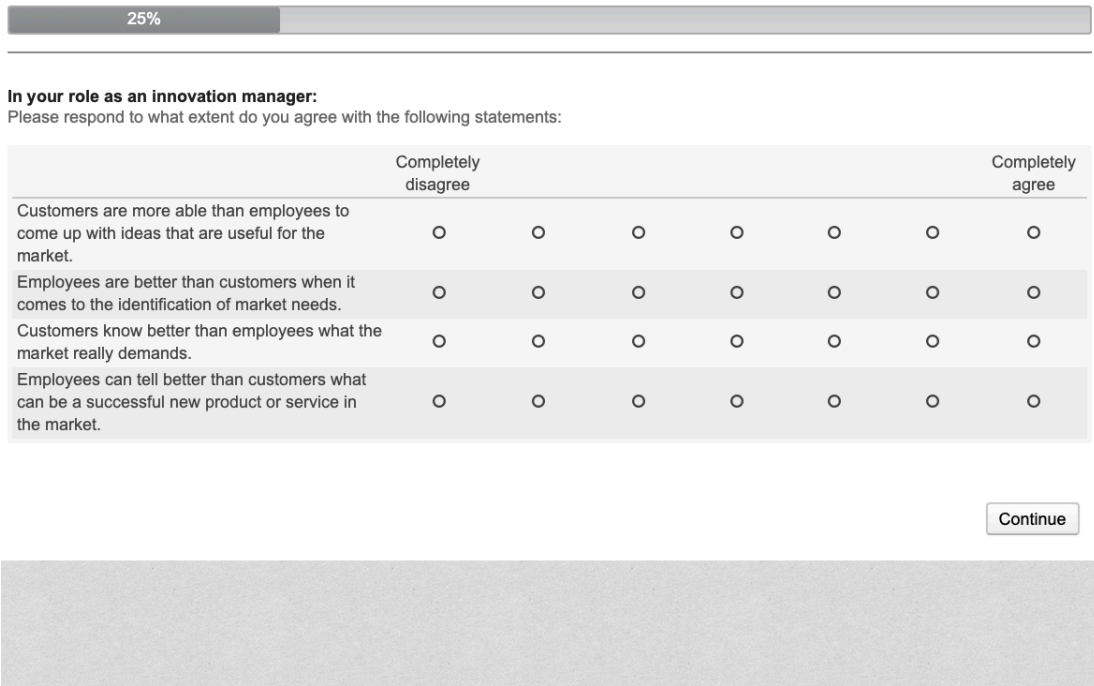


Figure A18. Screenshot Empirical Study 3a: CDI-Index Questions.

33%

**Your Choice of Ideas:**

Imagine that your company ran an **ideation contest** with both **consumers of your firm and internal employees** participating and suggesting ideas. Many ideas have been submitted, about half from consumers and half from employees.

In your role as **innovation manager** you can now choose to see either the ideas of the consumer or the ideas from the employees. **You can only choose to see EITHER the ideas of the consumer or the ideas of the employees.**

Which ideas would you want to see?

The ideas from the consumers   The ideas from the employees

Continue

Figure A19. Screenshot Empirical Study 3a: Pre-Selection of Ideas.

42%

**Evaluation of Originality**

Who do you think has more original ideas? (i.e., in a sense of being novel, creative, or unique)

Consumers of a company   Employees of a company

**Evaluation of Feasibility**

Who do you think has more feasible ideas? (i.e., in a sense of being realizable)

Consumers of a company   Employees of a company

**Evaluation of Usefulness**

Who do you think has more useful ideas? (i.e., in a sense of being valuable or providing benefit for a customer)

Consumers of a company   Employees of a company

Continue

Figure A20. Screenshot Empirical Study 3a: COI-Index and CFI-Index Questions.



13.5 Screenshots of Empirical Study 4

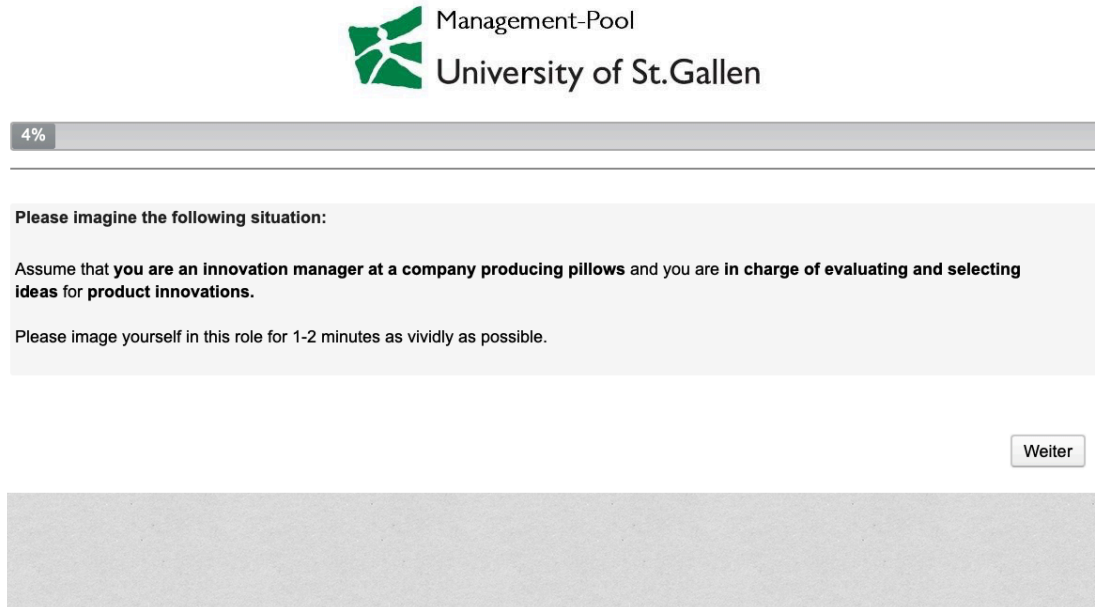


Figure A21. Screenshot Empirical Study 4: Scenario Description.

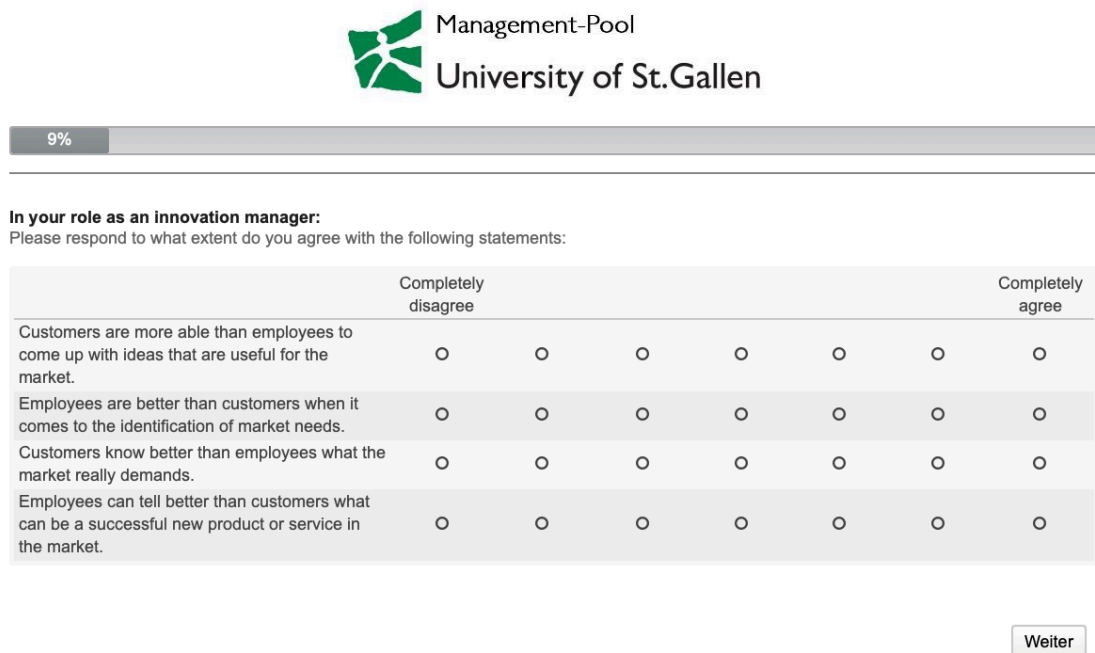
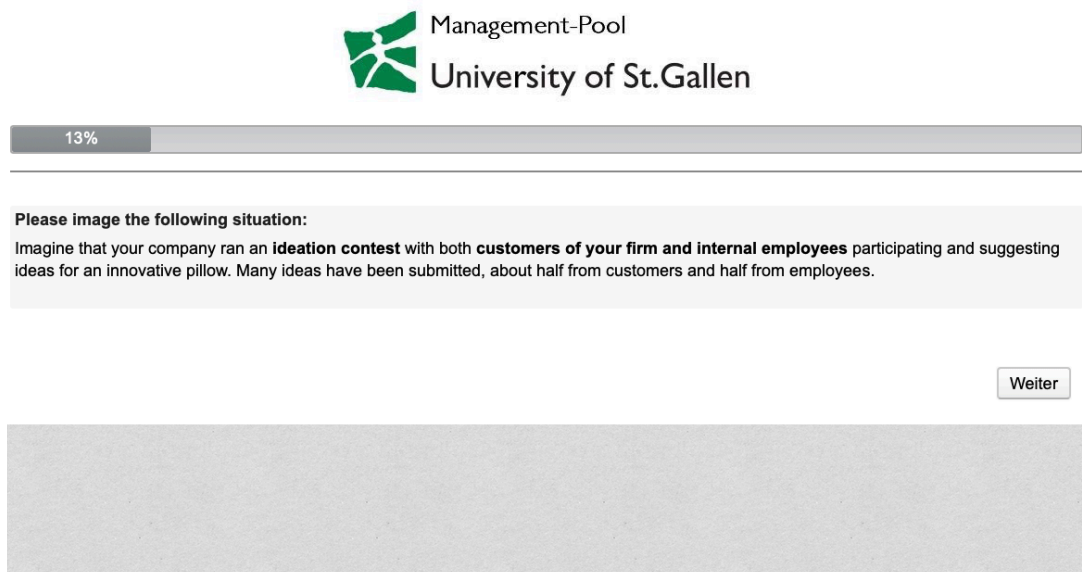


Figure A22. Screenshot Empirical Study 4: CDI-Index Questions.



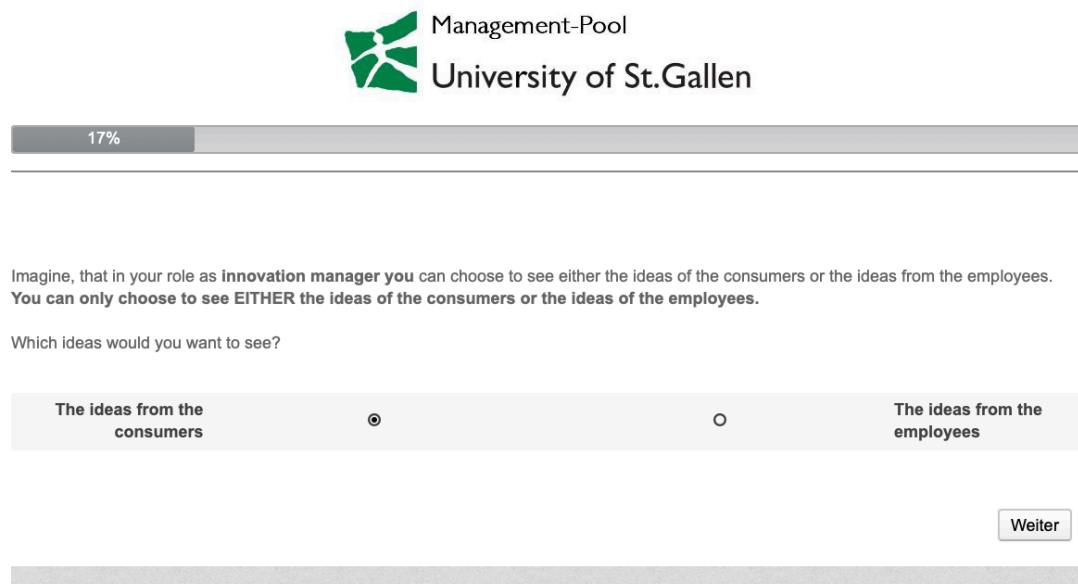
Management-Pool  
University of St.Gallen

13%

**Please image the following situation:**  
Imagine that your company ran an **ideation contest** with both **customers of your firm and internal employees** participating and suggesting ideas for an innovative pillow. Many ideas have been submitted, about half from customers and half from employees.

Weiter

Figure A23. Screenshot Empirical Study 4: Scenario Description 2.



Management-Pool  
University of St.Gallen

17%

Imagine, that in your role as **innovation manager** you can choose to see either the ideas of the consumers or the ideas from the employees.  
**You can only choose to see EITHER the ideas of the consumers or the ideas of the employees.**

Which ideas would you want to see?

The ideas from the consumers  The ideas from the employees

Weiter

Figure A24. Screenshot Empirical Study 4: Pre-Selection of Ideas.

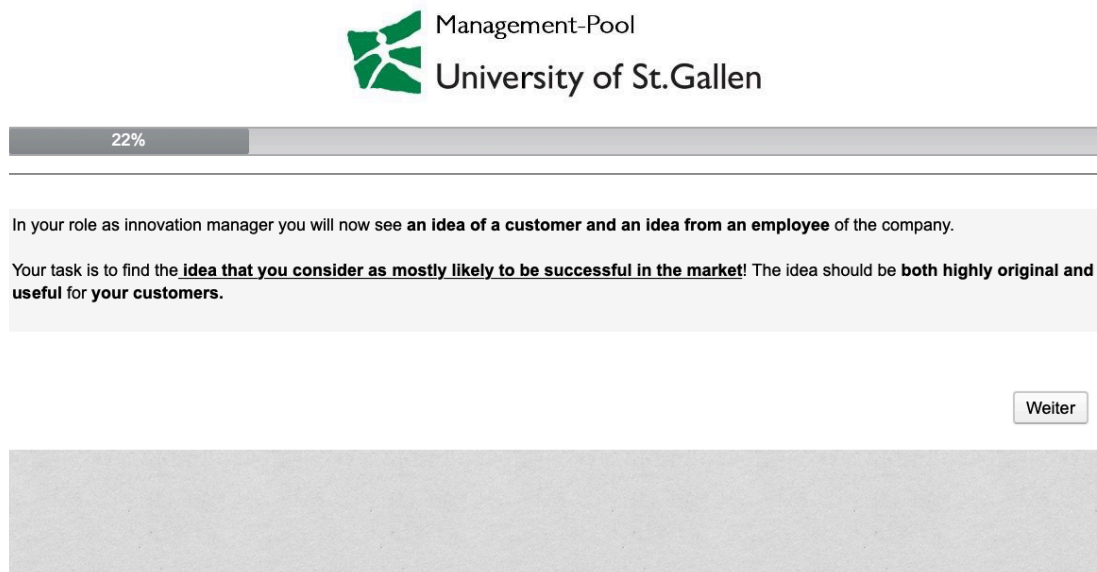


Figure A25. Screenshot Empirical Study 4: Scenario Description 3.

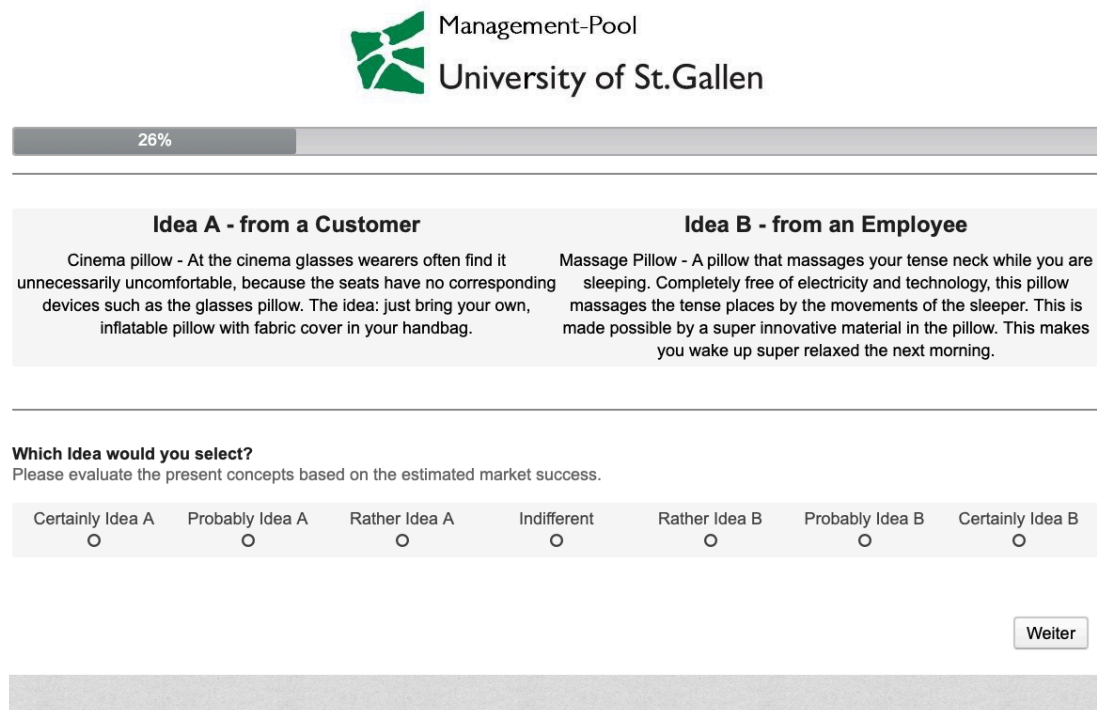


Figure A26. Screenshot Empirical Study 4: Choice Paradigm.





## 14 Curriculum Vitae

**LAURA BRAUN**

### PERSONAL INFORMATION

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Date of Birth: October 15, 1989

Place of Birth: Euskirchen, Germany

### EDUCATION

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- 02/2016-09/2019*      **University of St. Gallen, St. Gallen, Switzerland**  
PhD-Studies in Marketing  
Supervisors: Prof. Sven Reinecke & Prof. Oliver Gassmann
- 10/2012-08/2015*      **RWTH Aachen University, Aachen, Germany**  
Graduate Studies in Psychology (Title: Master of Science)
- 10/2009-08/2012*      **RWTH Aachen University, Aachen, Germany**  
Undergraduate Studies in Psychology (Title: Bachelor of Science)
- 08/2000-07/2009*      **Emil-Fischer-Gymnasium, Euskirchen, Germany**  
Abitur (General Qualification for University Entrance)

### PROFESSIONAL CAREER

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- 10/2015-09/2019*      **Institute of Marketing, University of St. Gallen, St. Gallen, Switzerland**  
Research Associate, Doctoral Candidate & Consultant in Marketing and Business Innovation Management
- 10/2015-05/2019*      **SAP Switzerland AG, Regensdorf, Switzerland**  
Research Associate in the Areas of Product & Business Development
- 04/2014-07/2015*      **Chair for Marketing at RWTH Aachen University, Aachen, Germany**  
Trainer, Lecturer & Project Assistant
- 01/2012-07/2015*      **Institute for Management Cybernetics at RWTH Aachen University, Aachen, Germany**  
Project Assistant, Consultant & Coach in Industry and Research Projects