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Alexander Pundt, Erko Martins, Friedemann W. Nerdinger*

Innovative Behavior and the Reciprocal Exchange between Employees and Organizations**

In this study, we investigated if employees' innovative behavior can be explained in terms of social exchange between employees and organizations. We developed a research model based on the Organizational Support Theory (Eisenberger et al. 1986). The model explains how innovative behavior among employees arises out of a feeling of being obligated, vis-à-vis the organization, to provide innovation-relevant contributions. It is presumed that this feeling of obligation is the result of perceived organizational support (POS), in so far as the organization provides resources relevant to innovation. Furthermore, we presume that the effect which these provided resources have on POS is moderated by the organization's obligation to provide them. The model was examined with the help of Structural Equation Models, by way of data from a questionnaire study ($N = 461$). The results confirm the proposed hypotheses to a large extent. Only the moderator effect remained unsubstantiated.

Innovatives Verhalten und der wechselseitige Austausch zwischen Mitarbeitern und Organisationen

In unserer Studie untersuchen wir, ob innovatives Verhalten der Mitarbeiter durch den Austausch zwischen den Mitarbeitern und der Organisation erklärt werden kann. Auf der Basis der Organizational Support Theory entwickeln wir ein Modell, nach dem innovatives Verhalten der Mitarbeiter aus ihrem Gefühl heraus entsteht, gegenüber der Organisation zur Leistung innovationsrelevanter Beiträge verpflichtet zu sein. Dieses Gefühl ist dem Modell nach ein Ergebnis innovationsrelevanter Ressourcen und der daraus resultierenden wahrgenommenen organisationalen Unterstützung (POS). Weiterhin wird die Wirkung dieser Ressourcen auf POS dem Modell nach durch die Verpflichtung der Organisation zur Bereitstellung der Ressourcen moderiert. Das Modell wurde mittels Strukturgleichungsmodellen anhand der Daten aus einer Fragebogenstudie ($N=461$) geprüft. Die Ergebnisse bestätigen weitgehend die Hypothesen, lediglich der Moderatoreffekt lässt sich nicht belegen.

Key words: social exchange, employee-organization relations, innovative behavior, voice behavior, perceived organizational support

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Introduction

Innovation is an important factor in helping organizations survive in a world full of changes (Fagerberg 2005; Westland 2008). While confronting the challenge of innovation, organizations do not merely rely on certain employees working in the research and development department. Instead, organizations try to mobilize the creative potential of all the employees (Bessant 2003). Thus, organizations are dependent on the knowledge, the creativity and the innovative engagement of their employees. However, since the relationship between employees and organizations can be characterized by diverging interests (Torrington/Hall/Taylor 2005), organizations cannot completely rely on the employees acting in accordance to the goals of the organization voluntarily (Etzioni, 1965). From this point of view, employees are primarily interested in their individual job and income security, career and developmental perspectives as well as being valued by the organization, whereas organizations are mainly interested in productivity, sales numbers or market shares (Organ/Podsakoff/MacKenzie 2006). Thus, one cannot assume that being creative and innovative is in accordance with the employees' interests in every case. Moreover, making innovative suggestions could also be rather risky as well and lead to unintended consequences for the employees, such as failures, conflicts with other employees and or supervisors or greater work demands (Janssen/van der Vliet/West 2004). Thus, innovative behavior could have consequences which contradict the employees' interests.

In managing innovation, organizations have to find a way to bridge the gap between diverging interests of employees and organizations and to motivate innovative behavior among employees regardless of the potential risks which accompany such behavior. In reference to Etzioni (1965), organizations establish control structures in order to ensure that the members of the organization act as desired. Economic organizations, in particular, are characterized by utilitarian power as the predominant form of control. This form of control is mainly exerted by means of material rewards. That means, economic organizations especially rely on providing monetary rewards in exchange for desired employee behavior.

In the context of innovation management, organizations try to establish reward systems to foster creativity or innovative behavior among employees (Leach/Stride/Wood 2006). Empirical findings on the effectiveness of rewards for creativity and innovative suggestions are, however, inconclusive. On the one hand, there are labor experiments and field studies which imply a positive effect of expected rewards on the creativity of participants (e.g. Eisenberger/Rhoades 2001). On the other hand, there are field studies which show no effect (Leach et al. 2006; Ohly/Stelzer 2007) or even a slightly negative effect of monetary rewards on the number of suggestions (Neckel 2003). Baer, Oldham and Cummings (2003) come to the conclusion that the effects of rewards on innovative behavior are bound to certain conditions. For example, they found a positive effect of extrinsic rewards on innovative behavior when employees are working in rather simple jobs whereas there was no effect on employees working in more complex jobs. All in all, the empirical evidence for the effectiveness of rewards in fostering creativity and innovative suggestions by the employees does not allow a definite conclusion.

Social exchange theorists (e.g. Blau 1964; Gouldner 1960) take another perspective on the issue of bridging the gap of diverging interests. While the reward approach is based on the rationale of an immediate exchange of rewards for innovative suggestions, the relationship between employees and organizations is described as rather geared towards the long-term (Eisenberger et al. 1986). From this point of view, organizations provide resources like developmental perspectives or social benefits not as a direct reward of performance – they rather provide these resources voluntarily and in advance to the employees' performance as a gift to the employees (Schulte/ Hausser/Kirsch 2009). Based on social exchange theory and the principles of gift economy (Dolfsma/van der Eijk/Jolink 2008; Marcoux 2009) and reciprocity (Gouldner, 1960), one could assume that these gifts make the employees feel obligated to return the favor by higher levels of loyalty, engagement and performance (Aselage/Eisenberger 2003).

Within this context, the reciprocal exchange between employees and organizations seems to be an important category for enhancing the understanding of innovative behaviors among employees. Our study, therefore, investigates the consequences of resources provided by the organization on the employees' feelings of obligation to reciprocate and, in the second step, on the innovative behavior of the employees. In this regard, we draw upon organizational support theory (OST; cf. Eisenberger et al., 1986) which provides an appropriate model for describing the exchange of innovation-relevant resources between the employees and the organization. Our study concentrates on voice behavior and communicating ideas as one particular aspect of the innovative behavior among employees. These behaviors are desired primarily in earlier phases of the innovation process, when the issue of innovation management is to receive as many ideas as possible rather than selecting and implementing innovative ideas (Rank/Pace/Frese 2004). After providing an overview of our model, we will explain the model in detail and derive hypotheses for our empirical study. We will describe the examination of these hypotheses afterwards.

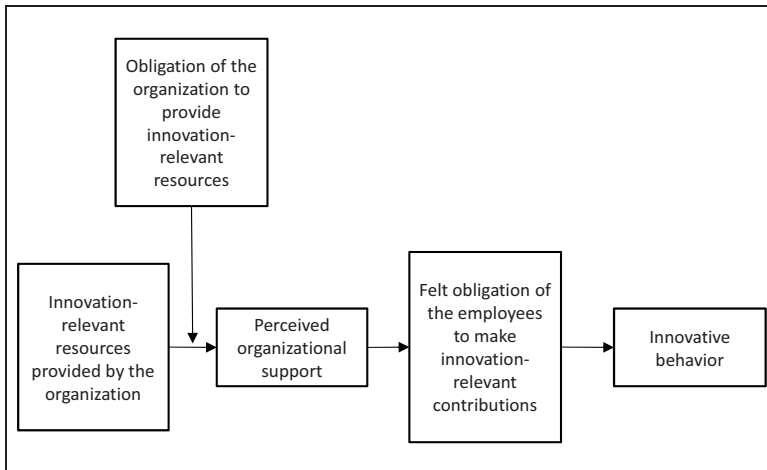
Theoretical foundation and hypotheses

Our study and the model we propose therein are based upon the organizational support theory (OST) developed by Eisenberger et al. (1986), who have already proven the theory's validity in a great number of empirical studies (cf. Rhoades/Eisenberger 2002). OST is based on the assumption that employees tend to attribute humanlike characteristics to an organization and perceive it as a subject capable of action (Levinson, 1965). Thus, the organization is held responsible for the way organizational agents treat the employees (Eisenberger et al., 1986). Employees use the way of treatment they receive by the organization as an indicator for the value the organization puts on the engagement and dedication of the employees and the extent to which the organization takes care of its employees. If the organization treats the employees well – providing for instance suitable rewards for performance and engagement, comfortable working conditions, supervisory support or procedural justice – employees will perceive organizational support (Rhoades/Eisenberger 2002). Perceived organizational support (POS) is defined as a global belief of the employees “concerning the extent to which the organization values their contributions and cares about their well-being”

(Rhoades/Eisenberger 2002, 698). Based on the universal norm of reciprocity implying that people help other people who have helped them in the past (Gouldner, 1960), OST makes the following assumption: The more employees perceive organizational support, the more they develop a global feeling of obligation towards the organization. Employees thus feel obligated to reciprocate by supporting the organization in accomplishing its goals (Eisenberger et al. 2001; Aselage/Eisenberger 2003).

The exchange relationship between employees and organizations described in OST is not bound to a direct and immediate exchange of resources for performance. Moreover, the relationship described in the OST framework is more adequately characterized in terms of gift exchange. In contrast to the idea of rewarding performance immediately, gift exchange is unbalanced at a particular point in time, but it is, however, long-term oriented (Dolfsma et al. 2008). In terms of OST, the organization provides certain resources to the employees. These resources are not meant as rewards of performance. It is rather meant as a gift to the employees who would feel obligated to return these gifts in the long run by higher levels of performance (Byrne/ Hochwarter 2007), organizational commitment (Rhoades/Eisenberger/Armeli 2001), extra-role behavior (Chen et al. 2009) and dedication (Muse/Stamper 2007).

Figure 1: Research model



Applying this framework to innovative behavior, we derived the following assumptions: The more innovation-relevant resources an organization provides to the employees, the more organizational support the employees will perceive. This leads to a feeling of obligation among employees to make innovation-relevant contributions to the organization. The larger the feeling of obligation, the more innovative behavior the employees will display. Furthermore, the research model includes the perceived obligation of the organization to provide innovation-relevant resources to the employees. Following Aselage and Eisenberger (2003) we assume that providing innovation-relevant resources will only lead to a higher level of perceived organizational support, given the organization provides these resources voluntarily. Figure 1 shows the

research model we are proposing. In the following paragraphs, we will explain the model we are proposing in detail.

Innovative behavior

West and Farr (1990, 9) define *innovation* as “the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, the organization or wider society.” Another term related to innovation is innovativeness. Gebert (2002) defines *innovativeness* as the ability of an organization to improve its products or processes, as well as the ability to exploit its innovative potential, and points out the meaning of supposedly smaller employee-led innovative initiatives which are an important element of organizational innovation beyond larger technological breakthroughs. These innovative initiatives are also referred to as *innovative behavior* (Scott/Bruce 1994).

Rank et al. (2004) distinguish between three distinct forms of innovative behaviors of the employees: Firstly, *employee creativity* which refers to the generation and development of novel and useful ideas (e.g. Binnewies/Ohly/Sonnentag 2007). Secondly, *voice behavior* which refers to the communication of novel ideas and problems to the decisive agents in the organization (Van Dyne/LePine 1998). And thirdly, *taking charge* of the implementation of novel and useful ideas and thereby making an important contribution to the organization being innovative (Morrison/Phelps 1999). Besides these behavioral characteristics, some researchers also investigated outcomes of the employees' innovative performance such as the number of ideas or suggestions the employees submitted to the suggestion scheme or other outcome variables (Klusemann 2003; Ohly/Sonnentag/Pluntke 2006; Rowold/Streich 2007; Tierney/Farmer/Graen 1999).

In our study, we investigate voice behavior and the number of ideas the employees communicate to the decisive agents of the organization as a manifest outcome equivalent of voice behavior as the results of social exchange processes, in that – as opposed to employee creativity, which is primarily attributed to personal characteristics of the employees (e.g. Dewett 2006; Shavinina/Seeratan 2003) – voice behavior is based on a conscious decision of the employees to articulate their ideas or rather to remain silent (Ortlieb/Stein 2008; Milliken/Morrison/Hewlin 2003; Morrison/Milliken 2000). Thus, voice behavior and the number of ideas submitted by the employees reflect a component of innovative behavior which can be influenced more easily by social exchange processes than employee creativity.

Innovative behavior and organizational support – state of empirical research

To date, empirical evidence on the relationships with innovative behavior implied by the OST-framework are rather sparse. The relationship between organizational resources (here: work-life benefits) and innovative behavior was investigated in only one study by Lambert (2000). In the results, Lambert (2000) could not show a significant zero-order correlation between work-life benefits and the number of suggestions. The usefulness of work-life benefits, however, turned out to be a positive predictor of the submitted suggestions in a structural equations model. A rather unexpected finding in

this study was the negative relationship between POS and the number of suggestions. This relationship was also independent from the positive effect of work-life benefits. Thus, Lambert (2000) did not find evidence for the mediation of the relationship between work-life benefits and innovative behavior via POS.

In contrast to the findings by Lambert (2000), two other studies found a positive relationship between POS and the employees' innovative behavior. Eisenberger, Fasolo and Davis-LaMastro (1990) considered the relationship between POS and the discretionary innovative performance of the employees. In their survey study, they found a positive relationship between POS and the rated quality (constructiveness) of the suggestions the employees made in response to an open-ended question at the end of the survey. This was interpreted as a hint of the relationship between POS and the employees' innovative behavior.

Spitzmüller et al. (2006) found a negative relationship between POS and the active decision of the employees not to respond in an organizational survey. This implies that employees are only willing to respond to organizational surveys and thus, to give information about their opinions to the organization if they feel that the organization treats them in a suitable way. Although Spitzmüller et al. (2006) do not consider innovative behavior directly, their findings imply a possible relationship between POS and voice behavior which is defined as speaking out ideas and opinions.

To sum up, the empirical evidence for the validity of OST in explaining innovative behavior among employees is rather sparse and ambiguous. There are findings supporting the assumption of a positive effect of resources provided by the organization on the employees innovative behavior (Lambert 2000), as well as ambiguous findings that support (Eisenberger et al. 1990; Spitzmüller et al. 2006) or contradict the assumption of a positive effect of POS on innovative behavior (Lambert 2000). However, there are no studies examining the whole causal chain implied by OST. There are, in particular, no studies examining the assumption of innovative behavior being a result of a feeling of obligation, which is, however, one of the central arguments in OST. In the following paragraphs, we will derive hypotheses on the whole causal chain implied by our OST-framework.

Innovation-relevant resources, POS and feelings of obligation

Broad empirical evidence is confirming effects of resources provided by an organization on POS. Organizational resources may be efforts relating to job security, developmental perspectives and training, open information policies, participation or work-life balance, and empirical findings demonstrate a positive relationship of these resources and POS (Baranik/Roling/Eby 2010; Dawley/Andrews/Bucklew 2007; Muse et al. 2008; for meta-analytic findings see Rhoades/Eisenberger 2002).

Since these resources and POS are theoretically related to *global* feelings of obligation (Aselage/Eisenberger 2003), we assume that there are some *innovation-specific* resources that are relevant in describing the exchange of innovative behavior and organizational resources. Such resources could be for example job security, professional training, diversified tasks or feedback regarding the employees' job performance. To make clear our theoretical argument, we explain the idea of innovation-relevant resources exemplarily, focusing on job security and professional training.

In reference to West (2000, 4), “creative cognitions occur when individuals feel free from pressure, safe, and positive”. Therefore, *job security* could be an important organizational resource that, if provided, would increase the employees’ readiness to think about creative ideas and to communicate these ideas to the decisive agents of the organization. West (2000) refers to one of his own studies of health care workers where he found that people in short-term contracts were less innovative than people in long-term contracts. Primarily in times of organizational changes, the assurance of future job security by the organization should be a resource highly valued by the employees, and this should make them feel obligated to reciprocate (Rhoades/Eisenberger 2002), if necessary by being more innovative, for example.

Professional training is also regarded as an important factor of the employees’ innovative behavior. Training increases the level of task specific knowledge, skills and competencies of the employees and, thus, enables them to develop creative ideas and innovative suggestions (Anderson/De Dreu/Nijstad 2004; Gebert 2002). Moreover, the employees could interpret professional training provided by the organization as an organizational investment in the employees which makes them feel obligated to reciprocate (Rhoades/Eisenberger 2002), if necessary by being more innovative, for example.

It seems reasonable that other innovation-relevant resources have similar effects on the employees’ feelings of obligation to reciprocate and to be innovative in returning the resources provided by the organization. In order to find out, which resources might qualify as innovation-relevant resources, we conducted a qualitative study before testing our hypotheses. We briefly describe this study in the measurement section of this paper. Based on the idea of reciprocity, we assume that employees who perceive more innovation-relevant organizational resources will feel more obligated to make innovation-relevant contributions. In accordance to research on POS, we further assume that the relationship between innovation-relevant resources provided by the organization and the employees’ felt obligation to make innovative contributions is mediated by perceived organizational support.

Hypothesis 1: There is a positive relationship between innovation-relevant resources provided by the organization and the employees’ felt obligation to make innovation-relevant contributions.

Hypothesis 2: The relationship between innovation-relevant resources provided by the organization and the employees’ felt obligation to make innovation-relevant contributions is mediated by perceived organizational support.

Organizational support, feelings of obligation and innovative behavior

As previous research has shown, employees do in fact reciprocate organizational resources that lead to POS by higher levels of extra-role behavior (Chen et al. 2009). Since voice behavior is conceptualized as one form of extra-role behavior (Van Dyne/Graham/Dienesch 1994), we assume that there should be a relationship between POS and voice behavior as well. In our model, we conceptualize voice behavior as the consequence of a felt obligation to reciprocate a suitable treatment by an organization.

Chen et al. (2009) argue that POS and the character of the exchange relationship between employees and organization is especially important in explaining discretionary behavior because the employees are in the position to decide whether or not they want to display it. Voice behavior, defined as the utterance of novel ideas, normally appears as discretionary behavior since the organization is not able to force an employee to speak out (Van Dyne/LePine 1998). Voice behavior seems to be more sensitive to the character of the exchange relationship between employee and organization, because the employees can also decide not to utter their ideas to the organization (Morrison/Milliken 2000). Similar to active nonresponse in organizational surveys (Spitzmüller et al. 2006), employees will articulate their ideas verbally only if the organization treats them in a suitable way and, thereby, induces feelings of obligation to reciprocate. Without feeling obligated to the organization, it would be easier for the employees to decide to hold back their ideas and suggestions. Thus, a higher level of the employees' feelings of obligation should result in a higher level of voice behavior. Furthermore, this relationship should also occur for the number of ideas the employees communicate to decisive agents of the organization since we conceptualized this as a manifest outcome equivalent of voice behavior.

Hypothesis 3: Employees' felt obligation to make innovation-relevant contributions is positively related to voice behavior.

Hypothesis 4: Employees' felt obligation to make innovation-relevant contributions is positively related to the number of ideas the employees communicate to the decisive agents of the organization.

Organizational obligations as a moderator

While considering innovative behavior in terms of social exchange, we then have to deal with the question of whether or not the character of the exchange relationship between employees and organization has been altered by attempts to fix the contributions of the organization in a contractual form. We are considering this question in terms of a psychological contract, defined by Rousseau and Tijoriwala (1998, 679) as "an individual's belief in mutual obligations between that person and another party such as an employer (either a firm or another person)". We assume that an explicit innovation contract which defines an obligation for the organization to provide innovation-relevant resources like job security, for example (e.g. Berthold/Brischke/Stettes 2003), will lead the employees to belief that the organization is obligated. Subsequently, the employees will expect the organization to provide these innovation-relevant resources to fulfill its contractual obligation. This organizational obligation, in terms of a psychological contract, changes the character of the exchange relationship between employees and organization as discussed in OST.

OST predicts that the resources which are provided by the organization are interpreted by the employees as signals. These signals are used to estimate the amount of organizational support, which, in turn, obligates employees to reciprocate through higher levels of performance, commitment, dedication or voice behavior, as explained above. Combining this prediction with the ideas present in the Psychological Contract Theory, Aselage and Eisenberger (2003) argue that the resources provided by the organization will only lead to POS if the organization provides them voluntarily as gifts

to the employees. It is only in this context that resources provided by an organization will obligate employees to reciprocate. However, if the employees feel that the organization is obligated to provide these resources, they no longer have the character of a gift (Schulte et al. 2009) and thus, cannot be used to estimate the amount of organizational support and, furthermore, no obligation to reciprocate can emerge. If the organization is obligated to provide these resources, the employees will perceive the providing of these resources as a fulfillment of a contract or a reciprocal obligation on the side of the organization. Therefore, providing innovation-relevant resources will only lead to perceived organizational support if the organization provides these resources as a gift and not as a fulfillment of a contractual obligation.

Hypothesis 5: The relationship between innovation-relevant resources provided by the organization and perceived organizational support is moderated by the perceived organizational obligation to provide innovation-relevant resources in a way that the relationship will be stronger, the lower the perceived organizational obligation is.

Method

Sample and procedure

In order to test our theoretical model, we conducted a survey study between May and August 2009, which was based both on an online as well as a paper-and-pencil questionnaire. Overall, we surveyed $N = 461$ employees from organizations in various branches and industries in Germany, 88 of which using the paper-and-pencil version and 373 using the online-version. Respondents ranged in age from 19 to 67 years ($M = 35.1$ years, $SD = 11.3$ years) and they had been working in their organization for an average of 7.0 years ($SD = 7.7$ years). The sample consisted of 233 women (50.2%) and 226 men (49.2%), two respondents did not list their gender. About 15% of the respondents were in a supervisory position, 71% had a permanent working contract, and 88% were full-time employees. Most of the respondents were working in the German federal state Mecklenburg-Vorpommern (75%), followed by Hamburg (11%), and other federal states of Germany (altogether 11%). The size of the organization our respondents worked for varied from 1 employee to 275'000 employees with a median of 800 employees. About 28% of these organizations did business in telecommunications, 13% in the energy sector, and the other respondents were working in other industries. The amount of each of these other industries in our sample, however, was 5% or below.

Measures

Exchange resources and organizational obligations. For measuring (1) *innovation-relevant resources provided by the organization*, (2) *obligation of the organization to provide innovation relevant resources* and (3) *felt obligation of the employees to make innovation-relevant contributions*, we had to develop new scales since no adequate scales were available in literature. Therefore, we conducted a qualitative pilot study and interviewed 29 employees from six different industrial organizations in Germany. We asked our informants how they themselves would envision an innovation-oriented exchange relationship between themselves and their organization and what resources the organization provided for initiat-

ing and fostering innovative behavior of the employees. The interviewees' statements were content analyzed and we extracted 19 different aspects, like for instance, "long-term job security" or "appreciation of good ideas I come up with". We then formulated a questionnaire item for each of these aspects.

For measuring *innovation-relevant resources provided by the organization* we used the instruction "The following sections pertain to various things which companies could provide for their employees. Please indicate the extent to which you agree to the following statements: My company does in fact provide ..." (for all items of this and the other scales measuring the innovation-related exchange, please see the appendix). Respondents indicated their agreement with these items on a 5-point Likert-scale from 1 = "do not agree at all" to 5 = "do completely agree". In our study, this scale had an internal consistency (coefficient α) of .94.

In order to measure the *obligation of the organization to provide innovation relevant resources*, we used the instruction "The following sections pertain to various things which companies provide for their employees. Please indicate the extent to which you agree to the following statements: My company is obligated to provide for ...". Respondents indicated their agreement with these items on a 5-point Likert-scale from 1 = "do not agree at all" to 5 = "do completely agree". This scale had an internal consistency (coefficient α) of .91.

Furthermore we asked the interviewees what innovation-relevant contributions they feel obligated to offer in the innovation-oriented exchange relationship between themselves and their organization. The statements of the interviewees were also content analyzed. 16 aspects were extracted and used to formulate 16 items, like for instance, "to utilize my own ideas in the company", "to develop solutions" or "to work overtime without compensation". For measuring *felt obligation of the employees to make innovation-relevant contributions* we used the instruction "If it is important for the company, then I feel obligated to ...". We used this introduction to express an obligation that is rather long-term oriented and has not to be fulfilled immediately. Respondents indicated their agreement with these items on a 5-point Likert-scale from 1 = "do not agree at all" to 5 = "do completely agree". This scale had an internal consistency (coefficient α) of .96.

Perceived organizational support. To assess employees' perceived organizational support, we used a German version of the eight item scale introduced by Rhoades et al. (2001). A sample item is "My organization cares about my opinions". Respondents indicated their agreement with these items on a 5-point Likert-scale from 1 = "do not agree at all" to 5 = "do completely agree". In our study, this scale had an internal consistency (coefficient α) of .90.

Voice behavior. We used a German self-report version of the six item scale developed by Van Dyne and LePine (1998) to measure employees' voice behavior. A sample item for this scale is "I make proposals to improve things here in my organization". Respondents indicated their agreement with the items of this scale on a 5-point Likert-scale from 1 = "do not agree at all" to 5 = "do completely agree". This scale had an internal consistency (coefficient α) of .84.

Number of ideas. In order to assess the innovative performance on an individual level, we tried to find a measure which could be used as a more objective measure than the self-rated voice behavior. Since the design of our study did not allow us to collect supervisor or peer ratings of the employees' voice behavior, and a suggestion scheme was not established in all organizations, we asked our respondents for the number of ideas they introduced in their organization at places other than the suggestion scheme (e.g. the direct leader, colleagues etc.) during the last month. Ohly et al. (2006) demonstrated the validity of this form of assessment for the number of suggestions the employees submitted to the suggestion scheme of the organization during the last year by showing a high correlation ($r = .81$) between the number of suggestions stated by the respondents and the number of suggestions actually submitted to the suggestion scheme.

Results

Table 1 reports descriptive statistics and intercorrelations of the variables investigated in this study.

Table 1: Descriptive statistics and intercorrelations between the measures used in this study

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. POS	2.85	.89					
2. Organizational obligation	3.97	.62	-.04				
3. Organizational resources	3.07	.79	.76***	.04			
4. Employee obligation	3.77	.88	.48***	.12*	.46***		
5. Voice behavior	3.52	.85	.30***	.16**	.33***	.52***	
6. Number of ideas	2.03	3.25	.05	.07	.05	.12*	.27***

* $p < .05$ ** $p < .01$ *** $p < .001$

We tested our hypotheses with structural equation modeling by applying the PC-program AMOS 4.0 (Arbuckle/Wothke 1999). A structural equation model seems to be an adequate technique for testing our hypotheses because it allows a simultaneous test of more than one hypothesis at once. Thus, this technique is suited for testing mediation models with more than one mediator (MacKinnon 2008). Furthermore, the structural equation modeling allows testing for a full or a partial mediation by comparing two different models. In the full mediation model, we fixed the direct effects to the value of 0, and in the partial mediation model, we allowed the direct effects to vary freely.

In order to test our moderation hypotheses, we followed the suggestions made by Jaccard and Wan (1995) by specifying a latent interaction variable which is reflected by multiple product-indicators. This technique seems to be adequate since we measured the resources provided by the organization as well as the organizational obligation to provide these resources by mirrored items (cf. the measurement paragraph). The product-indicators, thus, are the product of the items measuring the resources provided by the organization and the respective items measuring the organizational obli-

gation to provide each of these resources (for other techniques to specify latent interaction variables cf. Huber/Heitmann/Herrmann 2006). All variables in the model except for the number of ideas were integrated as latent constructs reflected by the items described in the measurement paragraph. The number of ideas as the second dependent variable was integrated into the model as a manifest variable.

Figure 2: Path diagram for the full-mediation model

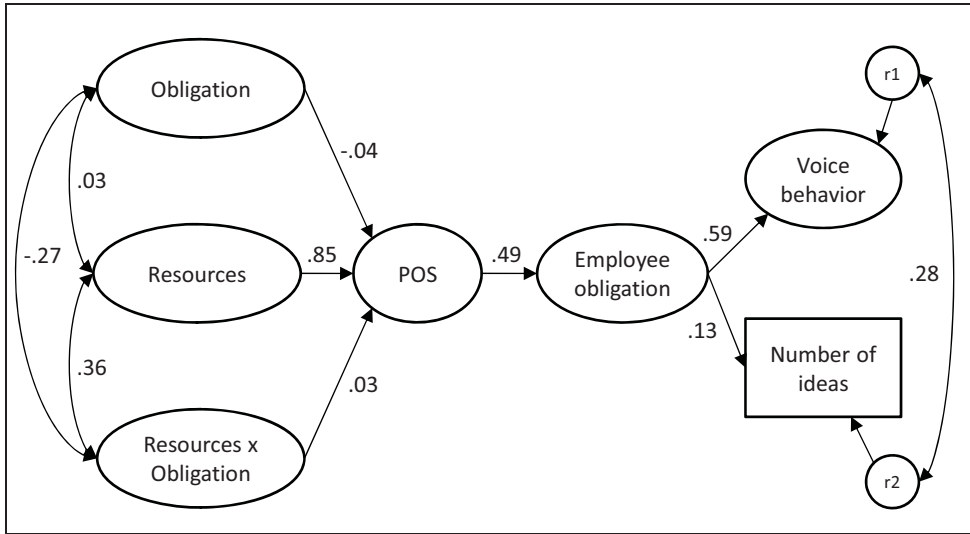


Figure 2 shows the path coefficients of the full mediation model. In this model, there is a significant path from the innovation-relevant resources provided by the organization via perceived organizational support ($\gamma = .85$) to the employees' felt obligation to make innovation-relevant contributions ($\gamma = .49$). This implies an indirect relationship between the innovation-relevant resources provided by the organization and the employees' felt obligation to make innovation-relevant contributions in return which is mediated by perceived organizational support. In this model, there are also significant path coefficients for the path from the employees' felt obligation to make innovation-relevant contributions to voice behavior ($\gamma = .59$) and the path from the employees' felt obligation to make innovation-relevant resources to the number of ideas the employees communicated to the organization during the last month ($\gamma = .13$). This implies a relationship between the employees' felt obligation to make innovation-relevant contributions and voice behavior or the number of ideas, respectively. However, the path coefficients for the paths from the organizational obligations to provide innovation relevant resources ($\gamma = -.04$) and the interaction of the resources provided by the organization and the organizational obligation, respectively ($\gamma = .03$), are not significant. This implies that there is no moderation effect of the organizational obligation on the relationship between the resources provided by the organization and perceived organizational support.

The fit indices of the full mediation model show an adequate model fit. Although the significant χ^2 -value implies that our model deviates significantly from the data ($\chi^2 =$

9427.84, $p < .001$), the χ^2/df -ratio with a value of 2.53 implies an adequate model fit. The root mean square error of approximation (RMSEA) as a descriptive measure of the overall model fit for this model shows an acceptable value ($RMSEA = .06$) (Hu/Bentler 1999; Schermelleh-Engel/Moosbrugger/Müller 2003). As a descriptive measure of model parsimony, we calculated the Akaike information criterion (AIC). The AIC-value for the full-mediation model is 9973.84. However, the AIC is only interpretable in comparison to an alternative model, the lower AIC of two AIC-values indicating the better model fit (Schermelleh-Engel et al. 2003). We used the AIC-value for a comparison of the full-mediation model with the partial-mediation model, the results of which we will report in the second step of our data analysis. However, since the full-mediation model has an adequate model fit and the path coefficients indicate the expected relationships except for the interaction effect, hypotheses 1, 2, 3 and 4 were therefore confirmed by this model whereas hypothesis 5 has to be rejected.

Figure 3: Path diagram for the partial mediation model

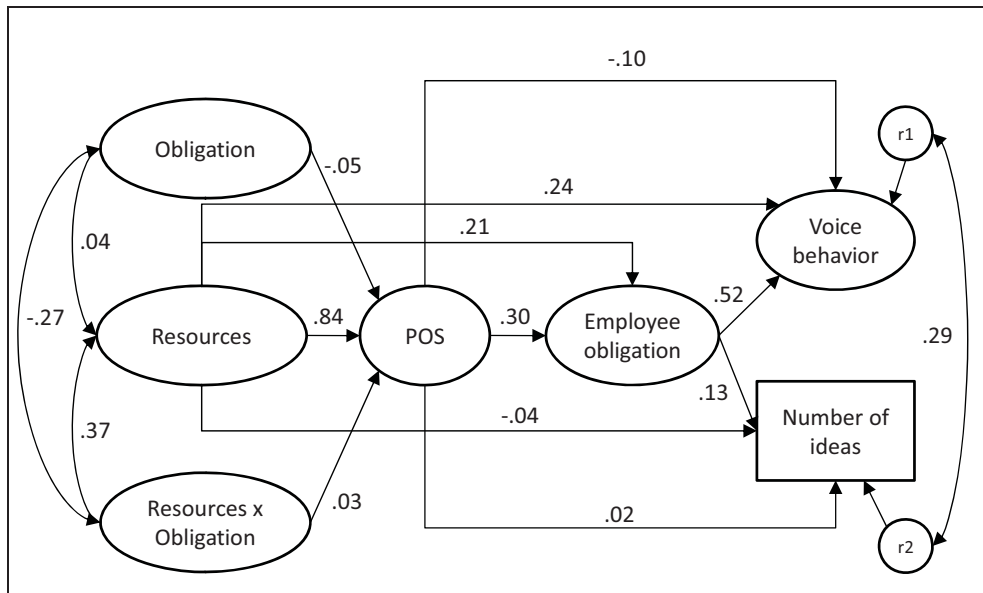


Figure 3 shows the path diagram for the partial-mediation model. In this model, we allowed the direct relations to vary freely. The fit-indices for this model do not vary very much from the fit-indices of the full-mediation model ($\chi^2 = 9411.14$, $p < .001$; χ^2/df -ratio = 2.53; $RMSEA = .06$). The AIC has a value of 9967.14 for the partial-mediation model. Thus, the AIC for the partial-mediation model is marginally smaller than the AIC for the full-mediation model. This indicates that the partial-mediation model fits the data marginally better than the full-mediation model.

In the partial-mediation model there are again significant path coefficients for the relationships between the innovation-relevant resources provided by the organization and perceived organizational support ($\gamma = .84$), between perceived organizational sup-

port and the employees' felt obligation to make innovation-relevant contributions ($\gamma = .30$), and the relationship between the employees' felt obligation to make innovation relevant contributions and voice behavior ($\gamma = .52$) and the number of ideas, respectively ($\gamma = .13$). Equally to the full-mediation model, the path coefficients for the path from the organizational obligations to perceived organizational support ($\gamma = -.05$) and the path from the interaction variable to perceived organizational support ($\gamma = .03$) are not significant in the partial-mediation model.

Furthermore, the direct path from the innovation-relevant resources provided by the organization to voice behavior ($\gamma = .24$) is also significant. This implies that the relationship is mediated only partially by perceived organizational support and the employees' felt obligation to make innovation-relevant contributions. However, the direct path from the innovation-relevant resources provided by the organization to the number of ideas is not significant ($\gamma = -.04$). Furthermore, the direct path from the resources provided by the organization to the employees' felt obligation to make innovation-relevant contributions ($\gamma = .18$) is significant whereas the paths from perceived organizational support to voice behavior ($\gamma = -.10$) and the number of ideas ($\gamma = .02$) are not significant. Thus, the partial mediation model also supports our hypotheses 1, 2, 3 and 4 whereas hypothesis 5 has to be rejected.

Discussion

In this study, we investigated if the innovation-relevant exchange between organization and employees is related to employees' innovative behavior. In terms of voice behavior and communicating ideas, our results imply that reciprocal exchange between organization and employees as described in organizational support theory is relevant for explaining employees' innovative behavior and thus can help organizations to tap the employees' innovative potency. The theoretical model and the mediation hypotheses derived from organizational support theory could be confirmed by the data collected for this study. However, we were not able to confirm the moderator hypothesis derived from the concept of psychological contract (Rousseau/Tijoriwala 1998) which implied that the exchange of innovation-relevant resources between the employees and the organization would only work if the organization provides its part of the exchange voluntarily as a gift, without any (perceived) contractual obligation.

The main issue of this paper is the application of OST to innovative behavior in general and voice behavior in particular giving diverging interests of employees and organizations. There are, indeed, already some empirical findings which relate POS to innovative behavior (Eisenberger et al. 1990; Lambert 2000; Spitzmüller et al. 2006) or to extra-role behavior which contains the generation and implementation of novel ideas (e.g. Chen et al. 2009). This study, however, is the first one explicitly testing the entire causal chain implied by OST. In particular, our study is one of the first studies testing if innovative behavior could be a result of the employees' feelings of obligation to make innovation-relevant contributions induced by innovation-relevant resources provided by the organization.

Our study also addresses the question of controlling innovative behavior. In contrast to directly rewarding innovative behavior, our study implies the possibility of fostering innovative behavior by gift giving without the direct expectation of immediately

given counter-gifts, whereby long-term oriented feelings of obligation are induced. Considering the ambiguous findings on the effects of rewards on creativity and innovative behavior, gift giving as a seemingly long-term oriented form of social exchange could turn out to be a more adequate form of exchange to foster innovative behavior among employees.

Another question our study addresses is whether the employees communicate innovative ideas to an organization on the basis of an exchange process or whether they only do so when they are deeply engaged in a relationship with an organization, as it is alleged for other kinds of relationships like for example a friendship or romantic relationships (cf. Buss 2008). Our results, at least, demonstrate the possibility that innovative ideas can be the result of a felt obligation based on a reciprocal engagement of the employees with their organization. However, here we have to stress the fact that we only investigated the effect of an exchange relationship on voice behavior. In fact, it is somewhat plausible that innovative behavior in earlier phases of the innovation process is more affected by a deeper employee-engagement with their organization or their job. Employees may develop novel ideas because they like their job or the mission of the organization, but would, however, only communicate their ideas if the exchange relationship were balanced.

Limitations and implications for further research

Since our data was collected in a cross sectional design, we are not able to draw definite causal conclusions about the relationships we investigated. Following Olobatuyi (2006), causal conclusions are bound to four conditions: First, there must be a theoretical rationale for assuming a causal relationship. Second, there must be an empirically verified relationship. Third, there must be a time shift between cause and effect. And fourth, other explanations have to be counted out. Since with OST we have a theoretical rationale and our data implies an empirical relationship between the variables investigated, we did some of the first steps on the way to provide evidence for a causal relationship between the character of the exchange between employees and organization. However, longitudinal studies that also control for third variable influences are needed to conclusively confirm the causal implications of the theoretical model we developed.

A second limitation is the potential common-method-bias (Podsakoff et al. 2003). Although most of the variables we investigated reflect psychological states and processes and thus, an operationalization of these variables as a peer or supervisor rating would not be useful, future studies should try to operationalize the dependent variables of our model by a peer or a supervisor rating or more objective outcome variables. Another solution of the common-method-bias could be a time delay between the assessment of the independent variables and the assessment of the mediator and dependent variables.

A third limitation is the heterogeneity of the sample. Thus, in our data there is a high potential for alternative explanations of the relations we found in our study. In order to address this potential problem, we calculated the partial correlations between the model variables controlling for the size of the organizations. Since there is no significant difference between the zero-order correlations we reported and the partial

correlations, we conclude that heterogeneity of the organization size does not influence our results. However, in further studies data should be collected from single organizations to make sure that the resources provided by the organization are comparable and not dependent on third variables like organization size.¹

Future studies should, for example, examine which resources actually can be traded for innovative behavior and which cannot, which resources are necessary and which are not essential for employees to make innovation-relevant contributions. These questions could be addressed in a qualitative interview study on the innovation-related exchange, whereas in this study, we only demonstrated that such an exchange can have an effect on innovative behavior, regardless of the impact of particular resources.

In order to further examine the effect of the exchange relationship between employees and organizations on innovative behavior, research should take a closer look at the relative impact of social exchange in comparison to other antecedents of innovative behavior, like for example leadership behavior (Detert/Burris 2007), team climate (Anderson/West 1998) or organizational culture (Martins et al. 2008). One may even theorize that some of these antecedents are moderator variables for the relationship between the feeling of obligation and the innovative behavior. Testing these kinds of relationship could be a fruitful approach, in order to be able to fit in the idea of social exchange into a more complex understanding of innovation management.

Aside from the impact of the innovation-related exchange between employees and organization, research should consider the extent to which the employees, supervisors, works councilors and other organizational agents value the exchange relationship. It might be possible that employees do not explicitly notice the exchange character of their relationship with their organization. It should be examined whether this is necessary for innovation-related exchange to be effective and which ideological beliefs possibly foster or prevent organizational agents from agreeing upon innovation contracts which define mutual obligations in the exchange between employees and organizations. Such beliefs could imply that employees are only able to be innovative when they identify or are deeply engaged with their organization or that a relationship based on exchange is only superficial.

Finally, a more extensive look should be taken at the meaning of the innovation-related exchange in different phases of the innovation process. Since voice behavior is only one special form of innovative behavior, future studies have to investigate if other forms of innovative behavior, such as the generation of novel ideas are also affected by the character of the exchange relationship between employees and organization. As discussed already, the exchange process could be rather important in the phase of idea communication, whereas a deeper engagement could be more important in the phase of idea generation.

¹ We thank one of the anonymous reviewers for this comment. The table of partial correlations calculated in this step is available from the first author of this study.

Managerial implications

The most important implication for managing innovation in organizations is: The innovation-related exchange is related to employees' innovative behavior. If the organization is providing innovation-relevant resources in terms of gift giving, the employees will be willing to reciprocate by making innovation-relevant contributions which subsequently lead to higher levels of voice behavior and more ideas communicated to the organization. Thus, providing innovation-relevant resources, observing POS and thereby inducing the need to reciprocate can be a useful means in fostering organizational innovation.

Our results build the basis for new forms of contracts and arrangements that have recently appeared in organizations which attempt to forge new agreement regarding the exchange between employees and organizations. One such arrangement is the so-called *innovation contract*, which is usually agreed upon by works councils and management. Thus, employees commit themselves to invest more of their creativity into their work, thereby increasing their level of innovation. In return, the management commits itself not to retrench employees, thereby providing a higher level of job security (cf. Berthold et al. 2003). In these innovation contracts, the exchange of innovation-relevant resources between employees and organizations are defined by a formal contractual agreement.

However, on the basis of the results of this study, we are not able to confirm whether or not the stipulation of an innovation-related exchange between employees and an organization in a formal innovation contract, may also be useful. Our results rather imply that stipulating the exchange has no consequences for innovative behavior. One could also conclude that a formal innovation contract would not hinder innovative behavior as well. In fact, we hypothesized a moderating effect of perceived organizational obligation on the basis of OST which, however, could not be confirmed. Thus, based on our data, there is neither reason to stipulate the innovation-related exchange nor is there reason not to do so. The implications for managerial practice therefore are as follows: If there is cause to stipulate the innovation-related exchange between employees and organization, other than its effects on innovative behavior (e.g. juridical reasons), then, based on our data, there is no reason not to do so. However, before a definite conclusion can be drawn on this question, further studies on this issue should be conducted.

An important task for such studies is to shed some light on the question of whether or not innovation-related exchange can be stipulated in a formal innovation contract agreed upon by works councils and management. A study investigating the effects of a formal innovation contract could be designed in a treatment-control group design with repeated measurements in both, the treatment and the control group. This kind of design is often used in training evaluation as well as in evaluation of organizational changes (Wottawa/Thierau 2003). Such a study is needed in order to gain deeper insights into the effects a formal innovation contract is able to induce.

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Appendix

I. Scales to measure (A) the organizational obligation to provide innovation-relevant resources, and (B) the extent to which the organization provides these resources:

The following sections pertain to various things which companies provide for their employees. Please state the following: A: the extent to which, in your opinion, your company is obligated to provide for the following items, and B: the extent to which the company does in fact provide these items.

1. Long-term job security
2. Diversified tasks
3. Information about important developments within the company

4. Chances at taking on responsibility
5. Latitude when carrying my work
6. Regular feedback regarding my job performance
7. I am allocated jobs which are genuinely important for the company
8. Possibility to carry out tasks from start to finish
9. Information about how things are interconnected in the company
10. Appreciation of me
11. Transmission of the feeling that my ideas and opinions are important
12. Interest also in my personal needs
13. Continuing education, so that I remain up to speed
14. Reasonable treatment of me
15. Possibilities for me to take part in making decisions
16. Appreciation of good ideas I come up with
17. Reassurance that others will not harvest the fruits of my labors
18. The possibility to simply try things out or give them a go
19. Good career opportunities

II. Scale to measure the employees' felt obligation to make innovation-relevant contributions:

If it is important for the company, then I feel obligated to...

1. Forgo part of my income
2. Work overtime without compensation
3. Utilize my own ideas in the company
4. Do more than I am obligated to do by my contract
5. To consider things beyond what is required of me
6. To put my heart and soul into the company
7. Remain inquisitive
8. To approach my work enthusiastically
9. Think about the future of the company
10. To develop solutions
11. To contribute my own creativity
12. To think about problems and their solutions even after the work day has ended
13. To contribute my knowledge and know-how
14. To search for ways to improve my work
15. To search for ways to improve the work-flow in my area of operations
16. To look for ways to save money