**Extrinsic Motivation as a Determinant of Knowledge Exchange in Sales Teams: A Social Network Approach**

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# **Abstract**

This paper investigates extrinsic motivation as a determinant of knowledge exchange among employees in sales teams. Applying a social network approach, we study different forms of knowledge-exchange behaviors from the perspective of a focal employee and from the perspective of the dyad. From the focal employee’s perspective, we disentangle knowledge seeking from knowledge providing, and argue that these two behaviors are affected differently by employees’ extrinsic motivation. From the dyad perspective, we take similarity in motivation of tied-to employees and reciprocity of exchange ties into account. To test our hypotheses, we apply exponential random graph models to data gathered from 138 employees in five different sales teams distributed across three companies in Central Europe. The results of our analysis from the focal employees’ perspective show that extrinsically motivated employees generally engage in less knowledge exchange. The dyad perspective further highlights that sales employees proceed purposefully when they exchange knowledge with coworkers. For instance, two employees’ relative levels of extrinsic motivation determine their willingness to engage in reciprocal knowledge exchange. We discuss the implications of our findings for research on the microfoundations of organizational knowledge management and draw conclusions concerning HRM practices used to foster extrinsic motivation, thereby affecting knowledge exchange.

# **Introduction**

The cooperative exchange of work-related knowledge is an important success factor for employees (Minbaeva, 2013; Minbaeva, Foss, & Snell, 2009), even in domains where they traditionally work autonomously, such as sales (Auh & Menguc, 2013; Verbeke, Dietz, & Verwaal, 2011). Firms also benefit from cooperative interactions among their staff, and, therefore, attempt to manage knowledge and knowledge exchange to ensure an advantage over competitors (Argote & Ingram, 2000; Grant, 1996; Jackson, Chuang, Harden, & Jiang, 2006; Kogut & Zander, 1992). At the same time, knowledge exchange among employees is largely a discretionary act that can be encouraged, rather than enforced, by firm management (A. Cabrera, Collins, & Salgado, 2006; Connelly, Zweig, Webster, & Trougakos, 2012; C.-P. Lin, 2007). Factors beyond management’s control, such as interpersonal similarity (Kleinbaum, Stuart, & Tushman, 2013) and tenure (Kaše, Paauwe, & Zupan, 2009), have been shown to drive knowledge seeking and knowledge providing in organizations. Recently, scholars have also begun investigating employees’ work motivation—a factor traditionally addressed by human resource management (HRM) practices—as a determinant of knowledge-exchange behaviors (Foss, Minbaeva, Pedersen, & Reinholt, 2009; Kaše et al., 2009).

As this research demonstrates, understanding the factors that influence employees’ knowledge-exchange behaviors is a major concern for HRM scholars and practitioners alike. Accordingly, several studies in the HRM literature have emphasized the importance of the microfoundations of knowledge exchange and its link to HRM practices (Jackson et al., 2006; Minbaeva, 2013; Swart & Kinnie, 2013). Explorations of the micro-level mechanisms that explain employees’ engagement in knowledge exchange with their coworkers help uncover HRM practices and incentive structures that can be put in place to encourage favorable behavior and build a competitive and responsive workforce.

In this study, we contribute to these efforts by investigating extrinsic work motivation as a determinant of employees’ knowledge-exchange behaviors. Work motivation, which is generally differentiated into intrinsic and extrinsic motivation (Ryan & Deci, 2000), has been widely acknowledged as a main driver of employees’ general conduct in organizations. It has also been recognized as determinant of knowledge-exchange behaviors (Foss et al., 2009; Gagné, 2009; Minbaeva, 2013). While intrinsic motivation is directed towards an activity—the individual draws enjoyment and satisfaction from his or her performance—extrinsic motivation is caused by external factors related to the activity (e.g., rewards or the threat of punishment) (Ryan & Deci, 2000). In relation to knowledge exchange, the role of intrinsic motivation is emphasized by previous studies arguing that it inherently fosters knowledge exchange in the organizational context (A. Cabrera et al., 2006; Gagné, 2009; Reinholt, Pedersen, & Foss, 2011). In contrast, the effects of extrinsic motivation on knowledge exchange are less clear. Studies to date offer evidence of positive (Burgess, 2005), negative (Bock, Zmud, Kim, & Lee, 2005), and insignificant (H.-F. Lin, 2007) effects of extrinsic motivation on different types of knowledge-exchange behaviors. In line with these conflicting findings, scholars point to a tension between employees’ pursuit of individual goals fueled by extrinsic motivation and their engagement in cooperative behavior, such as knowledge exchange, in the interest of their team and the organization as a whole (Swart & Kinnie, 2013).

In order to provide clarification, we approach this tension in the context of sales, where it is particularly salient. In the sales function, HRM practices and incentives, such as variable pay and premiums for performance, are often used to enhance employees’ extrinsic motivation and, thereby, increase individual performance (Miao & Evans, 2007). At the same time, the increasing importance of knowledge, knowledge exchange, and collaboration for sales performance has been acknowledged (Auh & Menguc, 2013; Dixon, Gassenheimer, & Barr, 2003; Mulki, Jaramillo, & Marshall, 2007). Previous studies have examined knowledge exchange of sales employees with coworkers from other functions within the organization, such as marketing, and with external actors, such as customers (Bradford et al., 2010; Üstüner & Godes, 2006; Üstüner & Iacobucci, 2012). Despite calls for an extension of this line of research (Verbeke et al., 2011; Yilmaz & Hunt, 2001), the exchange of work-related knowledge among employees within sales teams has not received much attention. In this study, we consider sales teams as an important context in which individual employees can benefit and learn from the experience of coworkers in similar roles, as they can gain knowledge directly related to their own work.

We use a network approach to analyze sales employees’ engagement in knowledge exchange with other sales employees. This approach allows us to investigate individual employees and their inclination to exchange knowledge depending on their extrinsic motivation. It also enables us to account for how employees exchange knowledge and with whom, and thereby analyze distinct exchange behaviors. For the empirical analysis, we apply exponential random graph models (ERGMs) to data on the networks and motivational orientations of 138 sales employees belonging to five sales teams. ERGMs are a sophisticated statistical method that allows us to identify the drivers of tie formation and social network structures (Goodreau, Kitts, & Morris, 2009; Lusher & Robins, 2012; Snijders, Pattison, Robins, & Handcock, 2006). They are particularly appropriate for our study, as they enable us to translate our network approach to examining the influence of extrinsic motivation on knowledge exchange into an appropriate statistical representation. More specifically, they allow us to investigate extrinsic motivation as a driver of knowledge-seeking and knowledge-providing ties from the perspective of the focal employee and the dyad at the same time, while controlling for network self-organization mechanisms that have repeatedly been shown to influence knowledge-exchange behaviors (Brennecke & Rank, 2017; Lomi, Lusher, Pattison, & Robins, 2014). Consequently, we are able to paint a comprehensive picture of distinct knowledge-exchange behaviors by, for instance, exploring the relationship between extrinsic motivation and employees’ propensities to engage in reciprocal exchange. By applying a network approach, we respond to a recent call by Tasselli, Kilduff and Menges (2015, p. 1376) who note “the relative absence of research on whether people with different motivations enact different types of networks.”

We contribute to the HRM literature by uncovering mechanisms that link extrinsic motivation, which is typically steered by HRM practices (e.g., incentives), to employees’ knowledge-exchange behaviors. In so doing, we follow several recent calls for research in this domain, especially requests to investigate the microfoundations of knowledge-related processes and practices in organizations (Felin, Zenger, & Tomsik, 2009; Minbaeva, 2013; Minbaeva et al., 2009). The results of our study reveal distinct behavioral patterns exhibited by extrinsically motivated employees with regard to their knowledge exchange with coworkers. These results further our understanding of how individual goal setting and the use of HRM practices and incentives affect cooperative behaviors among employees.

Applying ERGMs to investigate the link between extrinsic motivation and knowledge exchange, we also make a methodological contribution to the HRM literature. We follow repeated calls (Kaše, King, & Minbaeva, 2013; Kaše et al., 2009) and demonstrate the potential of this relatively novel network modelling approach to answer research questions of substantial interest for the HRM community.

Finally, we advance the state of knowledge about the consequences of motivational orientations for individuals’ cooperative behaviors in organizational settings. In extending previous research, we not only establish extrinsic motivation as important determinant of knowledge exchange but also provide in-depth insights into how extrinsic motivation gives rise to distinct exchange behaviors. Our findings provide valuable insights for HRM practitioners and sales managers with regard to the possible effects of incentive policies that target the extrinsic motivation of sales employees.

# **Theory and Hypotheses**

## **Motivation and Knowledge Exchange in Sales**

For scholars studying the microfoundations of knowledge-related processes in the workplace, work motivation is often a key subject of interest (Foss, Husted, & Michailova, 2010; Minbaeva, 2013). Generally differentiated into intrinsic and extrinsic, motivation has been shown to be a main predictor of employee behaviors in general and knowledge-exchange behaviors in particular (Gagné, 2009; W.-T. Wang & Hou, 2015). Importantly, the two forms of motivation have been shown to result in different types of individual behaviors (Degli Antoni, 2009; Vallerand, 1997; Vallerand & Bissonnette, 1992; Wong-On-Wing, Guo, & Lui, 2010) and should therefore be distinguished from each other (Gagné, 2009; Porter & Woo, 2015).

Intrinsic motivation has been linked to learning activities (Ryan & Deci, 2000; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004), creative problem solving (Amabile, 1993), and organizational citizenship (Stoner, Perrewé, & Munyon, 2011). With regard to knowledge exchange, intrinsic motivation has consistently been related to increased knowledge-seeking (A. Cabrera et al., 2006; Foss et al., 2009; Mueller & Kamdar, 2011) and knowledge-providing behaviors (Kankanhalli, Tan, & Wei, 2005; Reinholt et al., 2011; W.-T. Wang & Hou, 2015).

With regard to extrinsic motivation, previous studies have shown that increasing levels lead employees to adopt more efficient and goal-oriented behaviors to achieve higher returns and timely deliveries (Amabile, 1993; Cerasoli, Nicklin, & Ford, 2014). In relation to knowledge exchange, some scholars argue that extrinsic motivation might be counterproductive, as a focus on external rewards may discourage employees from engaging in cooperative behavior (Auh & Menguc, 2013; Osterloh & Frey, 2000). However, empirical analyses have produced inconsistent results. Hung, Durikova, Lai and Lin (2011) find a positive effect of a particular type of extrinsic motivation (reputation feedback) on employees’ knowledge contributions in meetings. In contrast, Foss et al. (2009) point to a negative effect of extrinsic motivation on employees’ self-reported knowledge sharing with coworkers. Similarly, Bock et al. (2005) show a negative effect of anticipated external rewards on employees’ attitudes towards knowledge sharing. Finally, Aalbers, Dolfsma and Koppius (2013) find no significant relationship between extrinsic motivation and employees’ knowledge exchange with employees outside their organizational unit.

Intrinsic motivation is often argued to outperform extrinsic motivation in terms of its benefits for the organization not only with regard to employees’ work performance but also in relation to their extra-role behaviors (Reinholt et al., 2011; Teigland & Wasko, 2009), such as knowledge exchange. However, in the work context, extrinsic motivation tends to be more prominent than intrinsic motivation, as many of the tasks that employees have to perform are not naturally inspiring or pleasant (Ryan & Deci, 2000). In sales, extrinsic motivation plays an even more important role. Various HR tools and practices seek to enhance performance via extrinsic motivation in the form of incentives, such as performance-related pay, performance premiums, or organization-wide publishing of individual performance achievements (Schwepker Jr. & Good, 2004). Therefore, it seems surprising that the role of extrinsic motivation in knowledge-exchange behaviors is still unclear.

## **A Network Perspective on Employee Knowledge Exchange**

The vast majority of extant studies on motivational orientations as determinants of employees’ knowledge-exchange behaviors adopt an individualistic approach. They concentrate on individual employees and their inclination to exchange knowledge depending on their motivation, but they fall short of explaining how employees exchange knowledge or with whom. Similarly, the few notable exceptions that investigate the link between motivation and networks (Aalbers et al., 2013; Teigland & Wasko, 2009) concentrate on the focal employees’ network positions and do not consider broader knowledge-exchange structures that provide insights into how employees exchange knowledge depending on their motivation.

We extend this stream of research by studying knowledge-exchange networks among a predefined group of people—members of sales teams (Ahuja, Soda, & Zaheer, 2012; Hu & Randel, 2014). In such a network, a focal employee engages in knowledge-exchange ties with others. As such, knowledge-exchange ties exist between two employees, creating a dyad in which one employee provides knowledge to or seeks knowledge from another employee. Accordingly, the dyad has been acknowledged as the smallest unit in which knowledge exchange can take place (Hansen, 2002; Thompson, Gentner, & Loewenstein, 2000). To provide a comprehensive account of how extrinsic motivation drives distinct knowledge-exchange behaviors, we follow Cross and Sproull (2004) and Brennecke (2019) and utilize the network approach to examine knowledge exchange among sales employees from the perspective of both the focal employee and the dyad.

The focal employees’ perspective, which allows us to study engagement in knowledge exchange from one employee’s point of view, is in line with previous research (Aalbers et al., 2013; Foss et al., 2009). We enrich this research by comparing and contrasting the role of extrinsic motivation for focal employees’ engagement in knowledge-seeking and knowledge-providing ties. Subsequently, we investigate the dyad by jointly considering both employees involved in a knowledge-exchange tie. We differentiate between the dyadic similarity and dyadic reciprocity perspectives. The dyadic similarity perspective enables us to study how two employees’ relative levels of extrinsic motivation influence their propensity to be engaged in a knowledge-exchange tie. The dyadic reciprocity perspective goes a step further and allows us to draw conclusions about whether knowledge exchange is reciprocated depending on the involved employees’ extrinsic motivation. Table 1 summarizes the three perspectives—focal employee, dyadic similarity, and dyadic reciprocity—that guide our subsequent theorizing and the derivation of our hypotheses.

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Insert Table 1 about here

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### ***Extrinsic Motivation and Knowledge Exchange from the Focal Employees’ Perspective***

The focal employees’ perspective allows for the fact that the seeking and providing of a resource are clearly distinct behaviors. The underlying mechanisms determining how the two behaviors are influenced by extrinsic motivation differ. Accordingly, studies have pointed to the need to differentiate between seeking and providing knowledge when investigating cooperative behavior among employees (Foss et al., 2009; A. Gupta & Govindarajan, 2000; Minbaeva et al., 2009). In the sales context, the cooperative exchange of work-related knowledge among coworkers cannot be controlled by management and is, therefore, typically excluded from individual goal setting and performance-related incentives (Auh & Menguc, 2013). However, while knowledge seeking and knowledge providing might not be directly linked to HRM practices and incentives used in sales, sales employees’ engagement in these two distinct knowledge-exchange behaviors can help them reach their goals if such engagement is perceived as enhancing performance.

First, consider knowledge seeking. For extrinsically motivated sales employees, the impulse to perform their tasks emanates from the incentives that are associated with their work performance (Aalbers et al., 2013; Osterloh & Frey, 2000). Such incentives might include monetary bonuses linked to specified sales goals. High levels of extrinsic motivation lead employees to engage in behaviors that are conducive to task fulfillment and, thereby, receiving those incentives (Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007). The creation of knowledge-seeking ties with coworkers is an easy and efficient way for sales employees to gain additional work-related knowledge. Through their network ties with other team members, they can extend their expertise and knowledge on, for instance, the best way to pitch a specific product to a customer, and thereby increase their overall work performance (Brennecke & Stoemmer, 2018; Cross & Cummings, 2004; Minbaeva, 2013). Higher performance, in turn, is likely to pay off for individual employees either directly by bringing them closer to the incentives or indirectly through better promotion opportunities. In line with this reasoning, extrinsically motivated sales employees should have a strong impetus to seek knowledge from their coworkers.

Surprisingly, few studies have investigated the link between extrinsic motivation and knowledge-seeking behavior and they have yielded inconsistent results. Burgess (2005) surveyed general managers of a large organization and found a marginally significant relationship between employees’ impressions of knowledge as a way to get ahead in the organization, which can be interpreted as extrinsic motivation, and the time they spent seeking knowledge. Foss et al. (2009) used survey data covering employees active in different functions and at different hierarchical levels in a large industrial organization, and found no significant relationship between the extrinsic motivation to exchange knowledge with coworkers and actually receiving knowledge from them. Both studies differ from ours in their definition of extrinsic motivation and as they do not apply a network approach. Moreover, they focus on a context other than sales.

Building on the above reasoning and in an effort to clarify the findings of research focused on other settings and using other approaches, we suggest that extrinsically motivated sales employees engage in more knowledge-seeking ties within their teams than sales employees who are less extrinsically motivated. We expect that:

*Hypothesis 1a.* Extrinsic motivation has a positive effect on focal employees’ engagement in knowledge-seeking ties.

While extrinsically motivated employees should see knowledge-seeking ties as means to move them closer to their incentives, the same does not apply to knowledge-providing ties. First, knowledge provision is associated with opportunity costs for employees (Carboni & Ehrlich, 2013; Hansen, 2013; S. Wang & Noe, 2010). Accordingly, extrinsically motivated employees may see the spending of time and energy on the execution of behaviors that do not directly assist in goal attainment, such as knowledge provision, as wasteful. More importantly, knowledge is a valuable resource that contributes to individual success in organizations in general and in the sales function in particular (Storbacka, Ryals, Davies, & Nenonen, 2009; Verbeke et al., 2011). To some extent, giving away one’s knowledge constitutes a loss of competitive advantage and power for employees (Gray, 2001; Pfeffer, 1992; Szulanski, 1996). Consequently, extrinsically motivated sales employees have no immediate incentive to share their knowledge with coworkers and they may instead keep it for themselves.

Previous empirical research on the effect of extrinsic motivation on knowledge provision has yielded conflicting results. While Hung et al. (2011) find a positive relationship in their experiment-based study, other studies relying on self-reported knowledge-providing behavior or intention yield evidence of negative effects (Bock et al., 2005; Foss et al., 2009). Moreover, Lin (2007) finds no significant relationship between employees’ expectations of organizational rewards for knowledge provision and the attitudes of those employees towards knowledge provision. Strikingly, none of these studies examine actual extrinsic work-related motivation. Instead, they focus on various dimensions of motivation that are specifically related to cooperation.

Building on the above theoretical reasoning, we propose a negative influence of extrinsic motivation on sales employees’ knowledge-providing ties within their teams. Stated formally:

*Hypothesis 1b.* Extrinsic motivation has a negative effect on focal employees’ engagement in knowledge-providing ties.

Beyond the focal employees’ perspective on how extrinsic motivation influences knowledge-seeking and knowledge-providing ties, we suggest that extrinsic motivation exerts an influence at the dyadic level. On this level, extrinsic motivation affects employees’ decisions regarding with whom to exchange knowledge (i.e., the dyadic similarity perspective) and through what type of relationship (i.e., the dyadic reciprocity perspective), which we discuss in turn.

### ***Extrinsic Motivation and Knowledge Exchange from the Dyadic Similarity Perspective***

With regard to employees’ decision with whom to exchange knowledge, we highlight the extrinsic motivation of the two employees (i.e., the dyad) involved in a knowledge-exchange tie. A widely recognized phenomenon affecting network-tie formation from a dyadic perspective is homophily (McPherson, Smith-Lovin, & Cook, 2001), a term that designates an individual’s attraction to similar others (Lazarsfeld & Merton, 1954). Homophily explains why network ties, such as those involving knowledge exchange, occur more often between individuals who share attributes than between individuals with different attributes (Marsden, 1988). The basic idea is that similarity provides common ground and thereby facilitates the formation of social network ties. This mechanism has been suggested as relevant for visible attributes, such as gender or age, as well as for perceived attitudinal characteristics, such as political opinions or work attitudes (Carmon, Miller, Raile, & Roers, 2010; Huston & Levinger, 1978).

While homophily seems to be a natural driving force for employee engagement in network ties, heterophily—the choice of exchange partners who have different attributes—has been shown to drive relationships in which individuals proceed strategically. In such relationships, individuals are motivated by the pursuit of specific instrumental goals (N. Lin, Dayton, & Greenwald, 1978). In particular, previous studies provide evidence of employees deliberately seeking out coworkers with different skills (Xie et al., 2016), heterogeneous knowledge (Burt, 2004), or divergent personality traits (Lee, Qureshi, Konrad, & Bhardwaj, 2014) in order to reap the benefits of the complementarity of resources associated with those relationships (Aten, DiRenzo, & Shatnawi, 2017).

Building on these findings, we suggest that employees intentionally take their coworkers’ motivation into account when selecting knowledge-exchange partners. As we argued above, high levels of extrinsic motivation can, to some extent, lead sales employees to behave opportunistically (Osterloh & Frey, 2000; Poortvliet et al., 2007) by minimizing knowledge disclosure while maximizing the knowledge they gather. This behavior should lead employees to primarily address their knowledge requests to coworkers who are different from them and willing to provide knowledge to others—employees who are less opportunistic with regard to their involvement in knowledge exchange. Accordingly, we expect highly extrinsically motivated employees to prefer knowledge-exchange relationships with less extrinsically motivated employees. In other words, we suggest that heterophily with regard to extrinsic motivation guides sales employees’ engagement in knowledge-exchange ties. From the dyadic similarity perspective, we expect:

*Hypothesis 2a.* The more dissimilar employees within the dyad are with regard to their extrinsic motivation, the more likely they are to engage in a knowledge-exchange tie.

We further propose that the higher the focal employees’ extrinsic motivation the stronger their tendency towards heterophily. That is, in accordance with and conditional upon the previous hypothesis, we expect that the more extrinsically motivated employees are, the less they should engage in knowledge-exchange ties with other highly extrinsically motivated employees. In formal terms:

*Hypothesis 2b.* Knowledge-exchange ties are less likely in dyads in which both employees have high levels of extrinsic motivation.

### ***Extrinsic Motivation and Knowledge Exchange from the Dyadic Reciprocity Perspective***

Previous studies have suggested that individual motivation also influences the types of social-exchange relationships in which employees engage (Cole, Schaninger, & Harris, 2002; Flynn, 2005). In line with this reasoning, we assume that the extrinsic motivation of sales employees not only affects their general knowledge-seeking and knowledge-providing behaviors, as well as their preferences regarding partners in knowledge-exchange relationships (the dyadic similarity perspective). We also presume that extrinsic motivation exerts an influence on the type of knowledge-exchange relationship in which two sales employees are likely to engage. From the dyadic reciprocity perspective, we explore the relationship between the extrinsic motivation of the members of a dyad and their engagement in reciprocal knowledge-exchange ties. In other words, we explore relationships in which both partners alternate in seeking and providing knowledge (Gouldner, 1960).

We argued above that extrinsically motivated sales employees generally prefer to seek knowledge from coworkers with lower extrinsic motivation, as the difference in work motivation between the two allows extrinsically motivated employees to take advantage of an unbalanced knowledge-exchange relationship in which reciprocation might not be necessary. This allows for quick and easy access to knowledge. However, other extrinsically motivated employees within their team might still possess valuable knowledge. Therefore, employees who wish to enhance their own performance and reach their incentive-related goals may not be able to avoid engaging in knowledge exchange with other extrinsically motivated employees. These extrinsically motivated coworkers also strive for their own goal achievement by acquiring knowledge that will help them in their endeavors. Given that both employees are pursuing their own objectives, extrinsically motivated employees are likely to reciprocally exchange knowledge with each other, as both partners in the dyad attach importance to the balanced giving and taking of valuable knowledge resources. As such, we argue that extrinsically motivated sales employees will share their knowledge with coworkers if those knowledge-sharing efforts are likely to pay off. We assume that the more the partners engaged in a knowledge-exchange relationship are extrinsically motivated, the more their exchanges are likely to be reciprocal:

*Hypothesis 3a.* The higher the combined levels of extrinsic motivation of the members of a dyad, the more likely it is that their knowledge-exchange tie is reciprocal.

This reciprocity hypothesis further implies that reciprocal relationships are more likely in dyads in which both employees have similar levels of extrinsic motivation. Conditional upon the above, we expect that similarity in goals, and hence extrinsic motivation, will additionally favor agreement between both partners on the need for balanced knowledge contributions within the dyad:

*Hypothesis 3b.* The more similar employees within the dyad are with regard to their extrinsic motivation, the more likely it is that their knowledge-exchange tie is reciprocal (i.e., homophily reciprocity).

Finally, based on the reasoning behind the two previous hypotheses, we argue that higher levels of extrinsic motivation within the dyad together with similarity in extrinsic motivation levels for both knowledge-exchange partners lead to an increased propensity for reciprocal knowledge exchange in dyads in which both employees have high levels of extrinsic motivation:

*Hypothesis 3c.* The higher the interaction between levels of extrinsic motivation of the members of a dyad, the more likely it is that their knowledge-exchange tie is reciprocal.

# **Data and Methods**

## **Research Sites and Respondents**

In line with our research question, we collected our data in a sales environment. More specifically, we collected data for entire sales teams, focusing on five teams in three distinct organizations in Central Europe. Each organization operated in the service sector (i.e., energy supply, banking, and postal services). In all teams, employees worked mostly independently and were subject to similar management-control systems and incentives characteristic for sales. All employees had individual sales-performance goals, which were defined during annual appraisal meetings between the employees and their managers. During these meetings, the extent of goal achievement realized in the previous sales year was also assessed. This served as a basis for determining the incentives employees received, especially their variable compensation, in the current year.

We relied on a survey that included items on the sales employees’ networks within their teams, their motivational orientations, and their demographic attributes. Similar to Perry-Smith (2006), we employed a multiple-contact strategy (Dillman, 2000) to distribute the survey and, thereby, increase the response rate. First, a senior sales executive in each organization informed employees about the survey and encouraged them to participate. Employees then received the questionnaire by mail and were asked to return it directly to the research team using an enclosed envelope in order to ensure confidentiality. We sent up to three reminders by mail to participants who had not responded. A new copy of the survey was provided if necessary. This procedure resulted in 138 exploitable responses, which corresponds to a response rate of 84%.

## **Data and Measures**

***Knowledge-exchange network.*** In accordance with our research question,we investigate employees’ knowledge-exchange behaviors in terms of their involvement in the intra-team knowledge-exchange network. To capture the network of each team, we used rosters of all employees of the specific sales teams. For a similar approach, see Soltis, Agneessens, Sasovova, and Labianca (2013) and Carboni and Ehrlich (2013). The roster method improves data reliability relative to the free-recall method in which participants are asked to list all of the ties they maintain with other employees, as the free-recall method entails the risk that participants might omit certain ties (Ho & Pollack, 2014; Marsden, 1990). We used two items to capture knowledge exchange: information and advice. Moreover, employees were asked to indicate their knowledge-exchange relationships as well as the direction of the knowledge flow (i.e., providing or seeking knowledge). More specifically, building on network questions used by Brennecke and Rank (2018) and Lomi, Lusher, Pattison, and Robins (2014), employees were asked to answer the following questions using the list of their fellow coworkers:

(a) Which of your fellow employees do you provide with important information and knowledge?

(b) Which of your fellow employees asks you for advice, help, and support that you then provide?

(c) From whom do you receive important information and knowledge that you use for your work in sales?

(d) From whom do seek work-related advice, help, and support?

All ties were recorded dichotomously. In other words, we only focus on whether a tie exists between any two team members. We first combined the answers to questions (a) and (b), which cover information and advice provision, into an overall knowledge-provision matrix. We then aggregated questions (c) and (d) on information and advice seeking into an overall knowledge-seeking matrix. In both cases, the answers to the network questions overlapped, justifying their aggregation. In line with common practice (Krackhardt, 1990; Tortoriello, McEvily, & Krackhardt, 2015), we then used this information to create a matrix of confirmed relationships[[1]](#footnote-1) in which we retained only those ties that were mutually indicated by both partners. In other words, relationships are defined as existing only when both involved parties agree that they exist. The application of the confirmation technique mitigates possible self-reporting bias and increases the reliability of our network measures (Comola & Fafchamps, 2014; Krackhardt, 1990). The matrix of confirmed relationships captures knowledge exchange—employees in the rows are considered knowledge providers and employees in the columns are knowledge seekers.

***Individual attributes.*** In line with our focus on the sales context, we collected data on employees’ motivational orientation using the measurement instrument developed by Oliver and Anderson (1994) for sales employees. Extrinsic motivation was measured using three items (e.g., “If it weren't for the money, I would not be in a selling job.”). We measured intrinsic motivation, which we included as a control variable, using six items (e.g., “Becoming successful in sales is something that I want do for me.”). All items were rated on a Likert-type scale ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). The properties of our measurement scales were tested by simultaneously applying confirmatory factor analysis for both constructs. While all three indicator variables used to measure extrinsic motivation presented satisfactory loadings on the construct, two of the six items measuring intrinsic motivation had to be removed, as they did not contribute significantly to the construct. The subsequent analysis for all remaining items yielded good fit indices (CMIN/DF = .84; GFI = .98; CFI = 1.00; RMSEA = .00; SRMR = .06). Average variance extracted (AVE) for intrinsic motivation was .55 and .57 for extrinsic motivation, confirming the constructs’ convergent validity. Moreover, both AVE values largely exceeded the inter-construct squared correlation, establishing the constructs’ discriminant validity (Fornell & Larcker, 1981). For the calculation of the latent constructs, the mean value was determined for the items associated with the factor.

Our analysis included additional individual attributes as control variables that are likely to affect employees’ engagement in knowledge-exchange ties. First, we captured leadership status by distinguishing between sales managers (coded as 1) and sales employees (coded as 0). We assume that occupying a formal leadership position may influence knowledge flows directed towards and emanating from an employee (Balkundi & Kilduff, 2006; Rank, 2008). Second, previous research has shown that gender may affect employees’ knowledge-exchange ties, as female employees might cooperate differently than their male counterparts (Burt, 1998; Jayawarna, Jones, & Marlow, 2015). We controlled for gender by coding women as 1 and men as 0. Third, tenure may affect employees’ networks, as cooperative relationships develop over time (Kleinbaum & Stuart, 2014). Therefore, employees who have worked with each other for several years are likely to have developed substantially more knowledge-exchange ties than employees who are relative newcomers. We measured tenure in years of affiliation with the organization. As the variable’s distribution was positively skewed, it was square root transformed (Osborne, 2005). Fourth, we controlled for employee age measured in years, as older employees may be more sought-after for providing knowledge to others. Finally, we included dummy variables that captured employees’ membership in the different sales teams.

Table 2 provides descriptive statistics for the network and individual attributes captured for the respondents from each of the five teams as well as for the overall sample.

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Insert Table 2 about here

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## **Analytical Method**

We analyzed the influence of employees’ extrinsic motivation on their knowledge-exchange network by applying ERGMs. ERGMs account for tie interdependence in network data (Lusher, Koskinen, & Robins, 2012). More specifically, they model a stochastic process in which network ties emerge as a function of two sets of effects: effects related to employee attributes (such as motivation) and network self-organizing effects related to other ties in the network (Robins et al. 2001; Robins et al. 2012). The inclusion of the latter set of effects enables an accurate characterization of the overall network structure in which individual ties are embedded (Lomi et al., 2014). A failure to incorporate them can lead to spurious results regarding the drivers of network ties, such as knowledge exchange (Krackhardt, 1987, 1988). In the following, we first describe the attribute-related and self-organizing effects included in the model before providing details on the estimation technique. All effects are depicted in Table 3.

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Insert Table 3 about here

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***Attribute-related effects.*** We transformed all employee attributes described in the previous section into effects for the empirical model as follows. First, we included knowledge-seeking (1) and knowledge-providing (2) effects. The knowledge-seeking effect models employees’ propensities to seek knowledge from others, while the knowledge-provider effect captures their propensities to provide knowledge to others. In each case, the effect depends on the size of a continuous attribute (e.g., extrinsic and intrinsic motivation and age) or the presence of a binary attribute (e.g., leadership status and gender). We use these effects to test Hypotheses 1a and 1b, which refer to the perspective of the focal individual.

For the dyadic similarity aspect covered in Hypotheses 2a and 2b, we integrated difference (3) and product (4) effects. The difference effect captures dissimilarity (i.e., the difference between the values of the attribute) between employees with regard to their extrinsic motivation. The product effect is a multiplicative interaction effect between two employees’ respective scores, which allows us to specify the difference effect by testing whether dyads of employees with low or high extrinsic motivation are more likely to exchange knowledge.

For the dyadic reciprocity aspect covered in Hypotheses 3a to 3c, we rely on different effects that capture the influence of extrinsic motivation on employees’ propensities to reciprocate knowledge exchange. The sum reciprocity effect (5) captures the propensity for knowledge to be exchanged on a reciprocal basis between two employees given their joint extrinsic motivation values. The difference reciprocity effect (6) assesses the tendency for reciprocal knowledge exchange between two employees given the difference in their extrinsic motivation. Finally, the product reciprocity effect (7) indicates the likelihood that a reciprocal tie is present between two employees given the multiplicative interaction of their respective extrinsic motivation scores. Finally, we include two additional attribute-related effects as control variables: similarity effects (8) to control for employees’ membership in the same team and joint tenure effects (9) as a dyadic attribute that captures the number of years each pair of employees spent in the organization together.

***Network self-organizing effects.*** Based on recommendations in previous studies on directed networks (Brennecke, 2019; Lomi et al., 2014), we included a number of effects to control for the tendency of networks to self-organize (Rank, Robins, & Pattison, 2010). Specifically, we captured the general propensity of employees to form network ties by including the arc effect (10). This effect, which is akin to the constant or intercept term in a regression, is often not interpreted itself (Lusher & Robins, 2012). We control for tendencies towards reciprocity (11) as an important principle that structures social networks in general (Gouldner, 1960) and guides knowledge exchange in particular (Caimo & Lomi, 2015). The knowledge-seeking and knowledge-providing two-star effects (12 and 13) capture employees’ tendencies to seek knowledge from or provide knowledge to multiple colleagues, while the brokerage effect (14) captures the interaction between employees’ tendencies to seek and to provide knowledge. The knowledge-seeking and knowledge-providing centralization effects (15 and 16) account for variations in the degrees to which employees seek and provide knowledge. Finally, the indirect connectivity effect (17) captures the tendency for ties to form as part of configurations involving open paths between two employees, while the transitivity effect (18) captures the tendencies for those paths to close based on the principle of transitive closure (Robins, Pattison, & Wang, 2009).

***Model estimation.*** All effects described above represent distinct local substructures within a network. ERGMs condition the occurrence of these substructures on the likelihood of observing the overall network and assess whether a specific substructure occurs more (or less) often in the observed network compared to its occurrence in random networks. Therefore, ERGMs are able to estimate the relative contribution of each local substructure to the overall shape of the observed network – conditional on all other substructures included in the model (Robins & Lusher, 2012b; Robins, Pattison, Kalish, & Lusher, 2007). We apply ERGMs to test our hypotheses, as they allow for the estimation of the relative influence of individual employees’ extrinsic motivation on knowledge seeking and knowledge providing while controlling for the influence of other knowledge-exchange ties in the network. In order to draw general conclusions from our analyses, we integrate all employees from the five teams into one model instead of performing separate ERGMs for each team. In other words, we aggregated all five intra-team knowledge-exchange networks into an overall matrix comprising all 138 sales employees. To account for the fact that ties can only occur between members of the same team, we integrated a second matrix (a “structural zero file”) into the model to ensure that only intra-team ties were considered in the estimation process (Basov & Brennecke, 2017; Kalish & Luria, 2012).

After estimating the model, we performed goodness of fit (GOF) tests to assess how well the estimated model represents the overall features of the observed network. To do so, a large number of graphs were simulated from the fitted model. The features of the simulated graphs were then compared to the features of the observed network. The higher the congruity between the simulated graphs and the observed network, the better the fit of the estimated model (Robins & Lusher, 2012a; Robins et al., 2009). We ran all analyses using the MPNet software package (P. Wang, Robins, & Pattison, 2009).

# **Results**

We present the estimated model in Table 4. From the focal employees’ perspective, we expected employees who were extrinsically motivated to have more knowledge-seeking and fewer knowledge-providing ties than those with low levels of extrinsic motivation (Hypotheses 1a and 1b). While the parameter estimates confirm Hypothesis 1b, Hypothesis 1a must be rejected, as the knowledge-seeking effect for extrinsic motivation is significant but negative. Apparently, extrinsically motivated employees not only have fewer knowledge-provision ties with others but they also engage in less knowledge seeking.

From the dyadic similarity perspective, we find a tendency towards heterophily with regard to extrinsic motivation, which supports Hypothesis 2a. The positive difference parameter indicates that employees prefer knowledge-exchange ties with employees who have different levels of extrinsic motivation. Surprisingly, however, this does not apply to employees with very high levels of extrinsic motivation. The positive product parameter indicates that if both of the parties involved in a dyad are highly extrinsically motivated, they are more likely to have a knowledge-exchange tie. We therefore reject Hypothesis 2b. Heterophily only applies to employees with moderate levels of extrinsic motivation.

With respect to the dyadic reciprocity perspective, the positive sum reciprocity parameter indicates that the higher the total of extrinsic motivation for both exchange partners, the more likely they are to exchange knowledge reciprocally, thereby confirming Hypothesis 3a. The negative difference reciprocity parameter reveals that employees prefer to maintain reciprocal relationships with employees with similar levels of extrinsic motivation, which confirms Hypothesis 3b. The latter effect can be seen as a specification of the heterophily effect we observe for employees with moderate levels of extrinsic motivation (the positive difference parameter used to test Hypothesis 2a). While moderately extrinsically motivated employees prefer knowledge-exchange ties with employees who have different levels of extrinsic motivation, this only seems to be the case for one-sided relationships. When employees engage in knowledge exchange with other (moderately) extrinsically motivated employees, those exchanges are reciprocal. Finally, the results indicate that the propensity for reciprocal exchange between employees with very high levels of extrinsic motivation eventually decreases (negative product reciprocity parameter), conditional on the general tendency for highly extrinsically motivated employees to exchange knowledge. Thus, we reject Hypothesis 3c.

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Insert Table 4 about here

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All results are conditional on the employees’ level of intrinsic motivation and the other control variables included in the model. More specifically, the control effects relating to individual attributes reveal that the intrinsic motivation of sales employees is positively related to knowledge-seeking ties but unrelated to knowledge-providing ties. Furthermore, leadership status has a positive effect on knowledge provision, suggesting that employees in leading positions generally provide more knowledge to others by passing on work-related information and advice to their team members. In addition, there is a negative knowledge-providing effect for gender, which reveals that women tend to provide less knowledge to others in their teams than their male colleagues. Age and tenure do not affect the knowledge-exchange network.

With regard to network self-organizing effects, it is worth noting that the reciprocity parameter for the overall network is insignificant. This suggests that there is no tendency for the reciprocal providing and seeking of knowledge beyond the reciprocal exchange that is driven by differences in extrinsic motivation. In line with the descriptive statistics for the networks, the positive knowledge-seeking and knowledge-providing two-star parameters reflect that individuals tend to seek knowledge from and provide knowledge to more than one person. That is, sales employees have multiple “go-to colleagues” for knowledge exchange within their teams. The brokerage effect shows a negative interaction between employees’ tendencies to seek and provide knowledge. In practical terms, this implies a division of roles with regard to knowledge exchange—those employees seeking knowledge from many colleagues do not provide knowledge to many others. The negative knowledge-seeking and knowledge-providing centralization parameters show that the knowledge-exchange network is decentralized. Sales employees do not differ much in terms of the number of knowledge-seeking and knowledge-providing ties that they form within their teams. The indirect connectivity parameter is negative, while the parameter for transitivity is positive. In the analyzed teams, there is no tendency for individual employees to intermediate knowledge flows between other employees. Instead, triads tend to close, which reflects the proverbial idea that “a friend of a friend is a friend.” In our context, this reflects the fact that a focal employee’s exchange partners also tend to exchange knowledge with each other. Finally, the results of the GOF tests indicate very good model fit. The t-values for all effects included in the model are below the threshold of 0.1 and the t-values for general model features (e.g., clustering and degree distribution) and effects not included in the model are less than 2 (Robins & Lusher, 2012a; Robins et al., 2009).

# **Discussion**

The aim of our study was to investigate how sales employees’ extrinsic work motivation affects their engagement in knowledge-exchange ties with others in their sales teams. The results of our analyses show that extrinsic motivation influences knowledge-exchange behaviors not only with regard to focal employees but also with regard to cooperative exchange within dyads. Some of our findings contradict our theorizing, which indicates that the influence of extrinsic motivation on knowledge-exchange ties is more complex than we expected. Table 5 offers a structured summary of our findings and their interpretation, on which we elaborate below.

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Insert Table 5 about here

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First, we provide evidence of a reduction in engagement in knowledge exchange as the focal sales employees’ levels of extrinsic motivation rise. These employees engage in fewer knowledge-seeking and knowledge-providing ties within their teams. While we expected extrinsically motivated employees to provide less knowledge to their coworkers based on our theorizing, the fact that they have fewer knowledge-seeking ties was unexpected. Although acquiring work-related knowledge could help enhance their performance (Brennecke & Stoemmer, 2018; Cross & Cummings, 2004) and help them to reach their goals and incentives (Balkin, Roussel, & Werner, 2015), these employees still refrain from engaging in a high number of knowledge-seeking ties. Overall, extrinsically motivated employees generally devote less time to activities not directly linked to incentives, such as seeking and providing knowledge.

Our results pertaining to the dyad perspectives allow us to specify and further explain the above finding. Extrinsically motivated employees appear to weigh the costs of a large number of knowledge-seeking ties against the benefits, and they appear to be discouraged from seeking knowledge by reciprocity obligations arising from the receipt of knowledge (Burgess, 2005; Flynn, 2003; H.-F. Lin, 2007). Moreover, the lower engagement in knowledge-providing ties by extrinsically motivated employees may keep their coworkers from sharing their knowledge with them.

More generally, our findings from the dyad perspectives demonstrate that when extrinsically motivated employees exchange knowledge, they do so purposefully. We theorized from the dyadic similarity perspective that heterophily with regard to extrinsic motivation determines knowledge exchange in sales teams, as we expected extrinsically motivated employees to engage in knowledge-exchange ties with coworkers with lower levels of extrinsic motivation. Surprisingly, this does not hold for employees with very high levels of extrinsic motivation, as they have a higher propensity to engage in knowledge-exchange ties with other highly extrinsically motivated employees. Apparently, a common motivational orientation allows for knowledge exchange between two highly extrinsically motivated employees with no strings attached—as neither highly extrinsically motivated employee is particularly concerned with engaging in tasks not directly related to their incentives, they have no expectations with regard, for instance, to reciprocity. As such, knowledge exchange can remain purely instrumental and take the form of one-off interactions.

This interpretation is reinforced by our dyadic reciprocity findings. The results of our study demonstrate that engagement in reciprocal knowledge-exchange ties is more likely for dyads in which both partners have similar levels of extrinsic motivation. When the incentive orientation of both employees coincides, equality and balanced exchanges are key. In order to satisfy both partners’ expectations for the exchange, it must be reciprocal. For two employees with very high levels of extrinsic motivation though, the effect on reciprocity becomes negative. The relationship between extrinsic motivation and reciprocity seems to follow an inverted U-shaped pattern. As indicated above, very highly extrinsically motivated employees might interact with each other with no strings attached. They may also be very competitive with one another and, consequently, refrain from participating in reciprocal exchanges. We interpret this latter finding with caution, as there were few exchange relationships in the investigated teams in which both employees exhibited very high levels of extrinsic motivation. We therefore recommend further investigation across different samples.

Overall, the results of our investigation provide evidence that extrinsically motivated employees engage in knowledge-exchange ties in a purposeful, cautious way. They focus on choosing the coworkers with whom they want to cooperate and on ensuring that they do not provide more knowledge than they receive.

## **Contributions**

Our study contributes to research in different ways. First, we add to the nascent stream of literature on the microfoundations of organizational knowledge-exchange processes and their relation to HRM practices (Foss et al., 2010; Minbaeva, 2013). As highlighted by several authors (Felin et al., 2009; Minbaeva, 2013; Minbaeva et al., 2009), HRM scholars and practitioners are inherently concerned with knowledge exchange among employees. On the one hand, knowledge exchange contributes to the building of human capital, enhancing individual competences and, thereby, performance (Swart & Kinnie, 2013). On the other hand, through knowledge exchange, team and organizational knowledge can be built, which is an important source for the competitive advantages of organizations (Collins & Smith, 2006; Kogut & Zander, 1992). However, as previous studies have emphasized, it remains unclear how HRM can actually influence individual employees’ engagement in knowledge exchange with their coworkers. Accordingly, scholars have stressed the importance for furthering our understanding of the micro-level mechanisms underlying organizational knowledge exchange processes.

Indeed, Foss et al. (2010) draw attention to the fact that the majority of research on organizational knowledge focuses on the investigation of macro-level processes, such as building absorptive capacity or dynamic capabilities (Teece, Pisano, & Shuen, 1997; Tsai, 2001). They highlight the need to enhance our understanding of the mechanisms at the level of individual employees and of dyadic interactions between individuals, which is crucial to develop a competitive organizational knowledge management. Similarly, Minbaeva (2013) underlines that individual-level factors influencing knowledge-exchange behaviors, such as motivation, as well as dyadic knowledge interactions need to be better understood to be able to apply effective HRM practices to encourage knowledge exchange among employees. By providing evidence for distinctive knowledge-exchange behaviors exhibited by extrinsically motivated sales employees from the perspective of the focal employee, as well as from dyadic perspectives, our study directly answers to the calls by Foss et al. (2010) and Minbaeva (2013).

First, our research clarifies previous ambiguous findings on employees’ engagement in knowledge-exchange activities by providing support for a negative effect of extrinsic motivation on employees’ knowledge providing and knowledge seeking (Bock et al., 2005; Foss & Minbaeva, 2009). Second, it extends existing findings by providing evidence for the importance of extrinsic motivation for employees’ decision with whom they preferably exchange knowledge and through what type of exchange relationship. Our results nuance previous suggestions on a possible inhibitory effect of the increase of extrinsic motivation through external rewards on employees’ willingness to engage in cooperative knowledge exchange (Auh & Menguc, 2013; Osterloh & Frey, 2000). Understanding these micro-level processes contributes to our comprehension on how HRM practices shape employees’ knowledge-exchange behaviors with their coworkers.

More specifically, with regard to the study of sales teams, our findings provide evidence that the mere focus on external rewards can be counterproductive with regard to cooperative knowledge exchange among team members. We demonstrate that there is indeed an adverse effect of fostering the extrinsic motivation of sales employees through rewards linked to individual performance on their knowledge exchange behavior with coworkers in their team. In doing so, we surface the tension hinted at for instance by Auh and Menguc (2013) and Swart and Kinnie (2013), between the focus on external rewards for individual goal attainment and the increasing importance of knowledge exchange.

The identified tension has implications that go beyond the team focus and extend to the organization as a whole. Previous research has pointed to the detriments of a misalignment between team and organization-wide HRM practices addressing different and potentially conflicting objectives (Boxall, Ang, & Bartram, 2011; Samnani & Singh, 2014), such as sales performance and cooperative behavior. Indeed, HRM practices such as incentives function as signals for employees about which behavior is expected and valued by the organization (Foss, Pedersen, Reinholt Fosgaard, & Stea, 2015; N. Gupta & Shaw, 2014). HRM practices designed to encourage one type of behavior, such as increased individual effort to improve sales performance, while neglecting to reward another desired behavior, such as cooperative knowledge exchange, are likely to produce overall unsatisfactory results as employees will likely adapt their behavior to focus solely on the attainment of the rewarded objective (Balkin et al., 2015). As Kerr (1975, p. 769) already put it, organizations should ensure not to be “rewarding A, while hoping for B”. So how can organizations select team and organization-wide HRM practices to attenuate the potential conflict employees are experiencing with regard to different organizational, team, and individual objectives? We discuss recommendations related to this important question in the section on managerial implications.

In addition to our contribution to the HRM literature, our analysis adds to the currently underdeveloped stream of research on HR-related and psychological factors as determinants of cooperative networks in organizations (Hollenbeck & Jamieson, 2015; Kaše et al., 2013; Soltis, Brass, & Lepak, 2018). The few studies that investigate the link between motivation and knowledge-exchange networks examine individual positioning in the network, while they neglect to consider the direction of the knowledge exchange (i.e., seeking or providing) (Aalbers et al., 2013; Teigland & Wasko, 2009) as well as dyadic or network self-organizing effects (Aalbers et al., 2013; Kaše et al., 2009; Teigland & Wasko, 2009). By accounting for the latter, we are able to provide more nuanced insights into the role of employees’ motivational orientation as a contributor to the overall shape of knowledge-exchange networks.

Related to the previous point, our study makes a methodological contribution to the HRM literature. We demonstrate the usefulness of ERGMs as powerful network modeling tool that can “help HRM researchers address the research questions that they have been unable to explore” (Kaše et al., 2013, p. 479). ERGMs are uniquely capable of translating our dual focus on the perspective of the focal employee and the dyad to an appropriate statistical representation and, thereby, advance the HRM literature.

## **Managerial Implications**

The results of our analyses have numerous managerial implications. Most notably, by enhancing our understanding of the influence of extrinsic motivation on sales employees’ knowledge-exchange behaviors, our study provides an opportunity to critically assess and potentially adapt HRM practices, specifically the use of incentives to foster extrinsic motivation and knowledge exchange behavior. The clear definition of organizational, team, and individual priorities with regard to desired behaviors is key for the establishment of an effective and aligned incentive system. Although this might seem self-evident, it is likely to be a difficult undertaking, as HR and sales managers face the aforementioned tension between divergent objectives that is particularly salient in sales: enhancing individual performance on the one hand and encouraging cooperative knowledge exchange on the other.

HRM efforts focused on developing an appropriate incentive policy should, therefore, be directed at reconciling the distinct requirements of the sales context, such as individual performance objectives, with the encouragement of knowledge exchange. Moreover, they need to keep an eye on the alignment of HRM practices and incentives applied to the organization as a whole, employees in specific functions, and teams. At the level of the overall organization, commitment-based HRM practices, such as incentives linked to common goal attainment and organizational performance, contribute to a climate of trust, cooperation and shared language (Collins & Smith, 2006), which in turn fosters a favorable organizational climate for cooperative behavior, such as knowledge exchange (Zárraga & Bonache, 2003).

These overall organizational efforts to foster knowledge exchange should be complemented with HRM practices that are specific to certain functions, such as sales, or to teams. While for some functions, such as R&D or marketing, knowledge exchange among coworkers is an inherent part of the daily routine (Brennecke & Rank, 2017; Shin-Yuan Hung, Hui-Min Lai, & Wen-Wen Chang, 2011), this is often not the case for sales and comparable functions in which employees work mainly autonomously. For employees in these functions, HRM practices should explicitly specify the cooperative exchange of knowledge between employees as an objective in the annual goal agreement and, thereby, acknowledge the importance of cooperative knowledge exchange—in addition to individual performance—as an object of external incentives (Minbaeva, 2013). With regard to teams, HR managers should combine individual goal setting and assessment of incentives with goals for team performance (Quigley, Tesluk, Locke, & Bartol, 2007). This ensures that employees are not only after the increase of their own performance, but also concerned with the overall performance of their team. As previous authors have suggested, combined individual and team goal setting is likely to encourage employees to help others by providing work-related information and advice to them more openly (Zárraga & Bonache, 2003), as these efforts are likely to result in higher overall performance for the team, which in return benefits individual team members.

Moving beyond incentives, organizations should support the above discussed practices by providing sufficient occasions for knowledge exchange among their employees. This implies specific organizational arrangements, especially for teams in which individual employees work autonomously, such as sales. Periodic gatherings during which employees have an opportunity to exchange information on their work and share their experiences might be useful and necessary to overcome impediments for knowledge exchange. As suggested by other authors, the HRM function could go even further by transforming job designs to encourage cooperative behavior (E. Cabrera & A. Cabrera, 2005). For instance, instead of dividing the overall field of activity for specific functions into individual responsibility areas, positions in which employees work in pairs with extended competences could be created to encourage intensive knowledge exchange and mutual learning within dyads. Finally, the above recommendations imply that knowledge exchange among sales employees must be monitored and evaluated. In this regard, the social network approach applied in this study for scholarly purposes can be utilized for HR purposes and “people analytics,” as suggested by Hollenbeck and Jamieson (2015), as well as Brennecke and Stoemmer (2018). Employees who stand out in the network owing to their engagement in knowledge-providing ties with coworkers can be rewarded.

## **Limitations and Future Research**

Our study has several limitations that point to opportunities for future research. First, we assume that employees’ work motivation is a determinant of their knowledge-exchange behavior. More specifically, we suggest that extrinsic motivational orientation towards work is rather stable and can, therefore, be considered as a determinant of knowledge exchange. In doing so, we follow existing literature on the microfoundations of knowledge exchange, discussing various individual-level psychological factors of interest from an HR perspective—such as motivation—as drivers of knowledge exchange (Minbaeva, 2013; S. Wang & Noe, 2010). Yet, we cannot exclude the possibility of a causal effect in the opposite direction. For instance, employees’ motivation is partly influenced by the larger organizational context in which they are embedded (Foss & Lindenberg, 2013; Lindenberg & Foss, 2011), and organizational networks are an important part of this context. While our study is concerned with the micro-processes linking extrinsic work motivation specifically to knowledge-exchange networks at the individual and dyadic level, future research should explore to what extent employees’ motivation is influenced by employees’ embeddedness in general organizational structures as well. Ultimately, determining the direction of causality is an empirical question requiring a longitudinal or experimental research design.

Second, we situated our empirical analysis in a sales context. This focus may limit the generalizability of our findings. As we argue, extrinsic motivation plays a particularly important role for sales employees and, as such, some of our results may possibly be driven by specifics of the sales function. We therefore encourage researchers to investigate the influence of extrinsic motivation on employees’ knowledge-exchange networks in other contexts where incentive-structures are less focused on extrinsic motivation, such as R&D.

Third, we study the influence of extrinsic motivation on knowledge-exchange networks within sales teams. This implies that we do not take boundary-spanning network ties with employees outside the team into account. Yet, boundary-spanning tie formation has repeatedly attracted the attention of management scholars (Allen, Gloor, Fronzetti Colladon, Woerner, & Raz, 2016; Lomi et al., 2014; Marrone, 2010). Building on our findings, future research should look into the relationship between employees’ motivational orientation and their tendencies to engage in boundary-spanning knowledge exchange. Similarly, we focus on the presence or absence of knowledge-network ties among sales employees. Following the tradition in organizational network research, future research can also account for the strength of ties, thereby deepening our understanding of how extrinsic motivation affects the frequency of knowledge exchange or the level of competence-based and affective trust ascribed to exchange ties.

Finally, our survey measures reflect some idiosyncratic choices. In line with our contextual focus, we measured extrinsic motivation among sales employees as a unidimensional construct following the operationalization provided by Oliver and Anderson (1994). Other authors distinguish several types of extrinsic motivation according to the degree of internalized regulation and experienced autonomy (Deci & Ryan, 2000; Gagné & Deci, 2005). Future research should examine whether these dimensions of extrinsic motivation have distinct effects on employees’ knowledge-exchange networks. Moreover, we were unable to measure personality factors, such as self-monitoring and the big five personality traits, which have been shown to influence network-tie formation (Battistoni & Fronzetti Colladon, 2014; Mehra, Kilduff, & Brass, 2001; Selden & Goodie, 2018) and may interact with the relationship between extrinsic motivation and employees’ knowledge-exchange behaviors.

## **Conclusion**

The above limitations notwithstanding, this study makes a significant contribution to HRM and organizational network research. Previous studies on the consequences of employees’ motivational orientation for knowledge exchange have been restricted to the focal employees’ perspective. As such, they have not investigated how employees exchange knowledge and with whom. Moreover, research on the determinants of knowledge networks has neglected factors of interest for HRM scholars, such as motivation. This study examines the influence of extrinsic motivation on employees’ knowledge-exchange behaviors using a social network approach, thereby extending both research streams. It provides evidence on how sales employees exchange knowledge and with whom based on their extrinsic motivation and, in so doing, demonstrates how employees’ motivational orientation contributes to the shape of the overall exchange network and their positioning within it. Our results suggest that combining research on the microfoundations of knowledge exchange with research on the emergence of intra-team network structures can generate insights of relevance for HRM scholars and practitioners alike.

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**TABLE 1**

**Summary of the Network Approach to Knowledge-exchange Behavior**

 = employee with distinct size of continuous attribute

|  |  |  |
| --- | --- | --- |
| **Perspective** | **Schematic Depiction** | **Explanation** |
| Focal individual |  | Influence of focal employee’s extrinsic motivation on their knowledge-seeking and knowledge-providing ties independent of the other individual involved in the exchange relationship |
|  |
| Dyadic similarity |  | Influence of the interplay of the extrinsic motivation of both parties involved in an exchange relationship on their propensity to be connected by a tie |
| Dyadic reciprocity |  | Influence of the interplay of the extrinsic motivation of both parties involved in an exchange relationship on their propensity to exchange knowledge reciprocally |

**TABLE 2**

**Descriptive Statistics for Network Characteristics and Individual Attributes**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Characteristic** | **Team 1** | **Team 2** | **Team 3** | **Team 4** | **Team 5** | **Overall network** |
| Sector | energy supply | banking | postal services | **3** |
| Employees | 63 | 28 | 18 | 16 | 13 | **138** |
| **Network characteristics** |
| Density | 18% | 20% | 30% | 54% | 44% | **33%** |
| Mean seeking/providing ties | 11.1 | 5.4 | 5.2 | 8.6 | 5.2 | **7.1** |
| Minimum seeking ties | 1 | 3 | 1 | 2 | 3 | **2** |
| Maximum seeking ties | 28 | 13 | 12 | 13 | 8 | **14.8** |
| S.D. seeking ties | 6.7 | 2.1 | 2.6 | 4.0 | 1.8 | **3.44** |
| Minimum providing ties | 2 | 1 | 0 | 4 | 2 | **1.8** |
| Maximum providing ties | 26 | 21 | 16 | 13 | 12 | **17.6** |
| S.D. providing ties | 6.2 | 4.5 | 4.8 | 2.9 | 3.5 | **4.38** |
| Reciprocity rate | 0.45 | 0.35 | 0.24 | 0.46 | 0.42 | **0.38** |
| Knowledge-seeking centralization | 0.28 | 0.29 | 0.43 | 0.32 | 0.25 | **0.31** |
| Knowledge-providing centralization | 0.24 | 0.60 | 0.68 | 0.32 | 0.61 | **0.49** |
| **Individual attributes** |
| Mean extrinsic motivation (S.D.) | 2.57 (1.06) | 2.56 (0.83) | 2.04 (0.85) | 2.23 (0.63) | 2.36 (0.79) | **2.44 (0.93)** |
| Mean intrinsic motivation (S.D.) | 5.19 (0.91) | 5.27 (0.86) | 4.92 (1.16) | 5.42 (0.92) | 4.94 (0.90) | **5.17 (0.93)** |
| Employees in leading position | 7 | 3 | 1 | 1 | 1 | **13** |
| Share of women | 10% | 14% | 44% | 19% | 23% | **17%** |
| Mean tenure\* (S.D.) | 2.48 (1.29) | 3.80 (1.10) | 3.36 (1.10) | 4.57 (0.91) | 4.19 (0.81) | **3.27 (1.38)** |
| Mean age (S.D.) | 41.95 (8.45) | 40.93 (7.93) | 34.47 (7.68) | 41.96 (10.11) | 36.77 (6.92) | **40.28 (8.64)** |

*Note.* Network descriptive statistics were calculated using UCInet; knowledge-seeking ties, in network terms, correspond to employees’ in-degree and knowledge-providing ties correspond to their out-degree; S.D. = standard deviation; \*square root transformed.

# **TABLE 3**

**Effects Integrated in the Analytical Model**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Effect** | **Visualization** | **Description** |
| **Individual Attribute Effects** |
| 1 | Attribute knowledge seeking |  | Employee’s propensity to seek knowledge from others depending on the size of a continuous attribute or the presence of a binary attribute |
| 2 | Attribute knowledge providing |  | Employee’s propensity to provide knowledge to others depending on the size of a continuous attribute or the presence of a binary attribute |
| 3 | Attribute difference |  | Propensity for a tie to be present between two employees depending on the difference of the values of the attribute for both employees; interpretable as a reverse similarity effect |
| 4 | Attribute product |  | Propensity for a tie to be present between two employees depending on the product of the values of the attribute for both employees; interpretable as an interaction effect |
| 5 | Attribute sum reciprocity |  | Propensity for reciprocation of ties to be present between two employees depending on the sum of the values of the attribute for both employees |
| 6 | Attribute difference reciprocity |  | Propensity for reciprocation of ties to be present between two employees depending on the difference of the values of the attribute for both employees; interpretable as a reverse reciprocation-similarity effect |
| 7 | Attribute product reciprocity |  | Propensity for reciprocation of ties to be present between two employees depending on the product of values of the attribute for both employees; interpretable as reciprocation-interaction effect |
| 8 | Attribute similarity |  | Propensity for a tie to be present between two employees with the same binary attribute; interpretable as a similarity effect |
| 9 | Dyadic attribute entrainment |  | Propensity for a tie to be present between two employees depending on the value of the dyadic attribute that is present at the same time |

 = employee with binary attribute or distinct size of continuous attribute; = employee with or without individual attribute

# **TABLE 3**

**Effects Integrated in the Analytical Model (continued)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Effect** | **Visualization** | **Description** |
| **Network Self-Organizing Effects** |
| 10 | Arc |  | One employee providing knowledge to another (baseline propensity to form ties) |
| 11 | Reciprocity |  | Mutual knowledge exchange between two employees (models the tendency for reciprocation across the network) |
| 12 | Knowledge-seeking two-star |  | Indicative of the presence of employees seeking knowledge from numerous other employees |
| 13 | Knowledge-providing two-star |  | Indicative of the presence of employees providing knowledge to numerous other employees |
| 14 | Brokerage |  | Interaction between employees’ tendencies to seek and provide knowledge, indicative of their knowledge brokering activity |
| 15 | Knowledge-seeking centralization |  | Tendency for variation in the degree to which employees seek knowledge (models the in-degree distribution) |
| 16 | Knowledge-providing centralization |  | Tendency for variation in the degree to which employees provide knowledge (models the out-degree distribution) |
| 17 | Indirect connectivity |  | Propensity for ties to form as part of formations involving multiple short paths between two employees |
| 18 | Transitivity |  | Transitive path closure indicating the propensity of employees to provide knowledge to employees who seek knowledge from their partners |

 = employee with binary attribute or distinct size of continuous attribute; = employee with or without individual attribute

# **TABLE 4**

**Results of the Exponential Random Graph Model**

|  |  |  |
| --- | --- | --- |
| **Effect+** | **Parameter Estimate** | **Standard Error** |
|  | **Effects for Extrinsic Motivation** |  |  |
| 1 | Extrinsic motivation knowledge seeking (H1a) | -0.446\* | 0.178 |
| 2 | Extrinsic motivation knowledge providing (H1b) | -0.462\* | 0.178 |
| 3 | Extrinsic motivation difference (H2a) | 0.176\* | 0.078 |
| 4 | Extrinsic motivation product (H2b) | 0.156\* | 0.068 |
| 5 | Extrinsic motivation sum reciprocity (H3a) | 1.100\* | 0.420 |
| 6 | Extrinsic motivation difference reciprocity (H3b)  | -0.382\* | 0.189 |
| 7 | Extrinsic motivation product reciprocity (H3c) | -0.375\* | 0.161 |
|  |  |  |  |
|  | **Attribute-based control effects** |  |  |
| 1 | Intrinsic motivation knowledge seeking | 0.060\* | 0.028 |
| 2 | Intrinsic motivation knowledge providing | 0.0077 | 0.028 |
| 1 | Leadership status knowledge seeking | -0.0642 | 0.078 |
| 2 | Leadership status knowledge providing | 0.230\* | 0.076 |
| 1 | Gender knowledge seeking | 0.091 | 0.074 |
| 2 | Gender knowledge providing | -0.241\* | 0.087 |
| 1 | Age knowledge seeking | 0.0037 | 0.003 |
| 2 | Age knowledge providing | -0.0041 | 0.003 |
| 8 | Team 1 similarity | -0.0273 | 0.084 |
| 8 | Team 2 similarity | 0.1083 | 0.095 |
| 8 | Team 3 similarity | 0.655\* | 0.157 |
| 8 | Team 4 similarity | 0.164 | 0.128 |
| 9 | Joint tenure entrainment | 0.018 | 0.030 |
|  |  |  |  |
|  | **Network self-organizing control effects** |  |  |
| 10 | Arc | 1.3513 | 0.882 |
| 11 | Reciprocity | -0.6698 | 0.985 |
| 12 | Knowledge-seeking two-star | 0.066\* | 0.006 |
| 13 | Knowledge-providing two-star | 0.054\* | 0.007 |
| 14 | Brokerage | -0.055\* | 0.005 |
| 15 | Knowledge-seeking centralization | -1.889\* | 0.384 |
| 16 | Knowledge-providing centralization | -0.687\* | 0.200 |
| 17 | Indirect connectivity | -0.067\* | 0.012 |
| 18 | Transitivity | 1.153\* | 0.076 |

*Note.* **+** The effect numbers refer to the numbering used in Table 3; unstandardized estimates; two-tailed significance tests are reported; \**p* < .05.

**TABLE 5**

**Summary of Findings**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Perspective** | **Hypothesis** | **Schematic Depiction** | **Finding** | **Interpretation** |
| Focal individual | H1a: Knowledge seeking |  | The higher sales employees’ extrinsic motivation, the less likely they are to engage in knowledge-seeking ties. | High levels of extrinsic motivation discourage sales employees from seeking knowledge from coworkers despite their pursuit of incentives. |
| H1b: Knowledge providing |  | The higher sales employees’ extrinsic motivation, the less likely they are to engage in knowledge-providing ties. | Striving for incentives reduces employees’ inclination to engage in cooperative knowledge exchange with their coworkers.  |
| Dyadic similarity | H2a: Difference |  | The greater the difference between two sales employees’ levels of extrinsic motivation, the more likely they are to engage in knowledge-exchange ties. | Extrinsically motivated employees purposefully select knowledge-exchange partners with different incentive orientations who are likely to be more generous with regard to knowledge provision.  |
| H2b: Product |  | The greater the multiplicative interaction of two sales employees’ levels of extrinsic motivation, the more likely they are to engage in knowledge-exchange ties. | If both parties involved in a dyad are highly extrinsically motivated, they are more likely to engage in a knowledge-exchange tie. |
| Dyadic reciprocity | H3a: Sum |  | The higher the total level of extrinsic motivation for both exchange partners, the more likely they are to engage in reciprocal knowledge-exchange ties. | The more extrinsically motivated both partners in the dyad are, the more they are willing to provide knowledge to the same extent as they are able to seek knowledge. |
| H3b: Difference |  | The greater the difference between two sales employees’ levels of extrinsic motivation, the less likely they are to engage in reciprocal knowledge-exchange ties. | Similarity in the levels of extrinsic motivation between exchange partners increases the propensity to reciprocally exchange knowledge to satisfy the partners’ similar goals.  |
| H3c: Product |  | The larger the multiplicative interaction of two sales employees’ levels of extrinsic motivation, the less likely they are to engage in reciprocal knowledge-exchange ties. | The propensity for reciprocal knowledge exchange decreases for dyads in which both partners have very high levels of extrinsic motivation. This points to an inverted U-shaped pattern for reciprocal knowledge exchange in relation to levels of extrinsic motivation for both partners within the dyad. |

1. To create the matrix of confirmed relationships, we multiplied the matrix created from questions (a) and (b) with the transposed matrix created from questions (c) and (d). Cell *xij* in each matrix corresponds to employee *i*’s relationship with another employee *j* and is coded as 1 if *i* indicated that he or she provided knowledge to/sought knowledge from *j*, and 0 otherwise. [↑](#footnote-ref-1)