



**BOCHOLT**

## Knowledge Sharing in a German Municipality

### - Identifying Supportive Factors

Laura Martina Zurheiden

Radboud University

Name: Laura Martina Zurheiden

Student number: 4101014

Instructor: Michelle Van Laethem

Faculty of Social Sciences

Radboud University

Date: 26.06.2015

Word count: 6653 words, 6356 without tables

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## **Management Summary**

### **Background**

Demographic change in Western countries has led not only to an aging population, but also to an aging workforce. In the German municipality Bocholt, a high percentage of highly qualified and experienced employees will retire in the next years. These employees serve as a valuable resource of knowledge, which makes their retirement a potential problem for the municipality. To prevent the loss of this important knowledge, it was decided to develop a knowledge management program for the municipality. In order to establish effective measurements for this program, it was chosen to first investigate the current knowledge sharing among employees. The main aim of the present research project was to examine the factors that contribute to the current knowledge sharing. Based on a literature review, it was decided to investigate the relations between knowledge sharing and learning culture, supportive communication climate, intrinsic motivation to share knowledge, and affective commitment. It was hypothesized that learning culture, supportive communication climate, and intrinsic motivation to share knowledge would be positively related to knowledge sharing. Moreover, it was expected that affective commitment would mediate the relation between supportive communication climate and knowledge sharing.

### **Method**

Employees in qualified functions with a high responsibility and who will retire in the next years were invited to participate in an online survey to measure the factors learning culture, supportive communication climate, intrinsic motivation to share knowledge, affective commitment, and knowledge sharing. This was done via an online survey. A total of 133 employees were contacted, of whom 76 participated in this study.

### **Results**

Regression analysis revealed that learning culture positively related to knowledge sharing. Moreover, evidence for a positive relation between supportive communication climate and

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knowledge sharing was found. On the contrary, intrinsic motivation to share knowledge was not found to be a significant predictor, and neither was a mediation effect of affective commitment on the relation between supportive communication climate and knowledge sharing found. Furthermore, our results revealed that employees are committed to the municipality and highly motivated to share their knowledge. Additionally, the communication climate within the municipality is perceived to be very supportive.

### **Conclusion**

The most important factor for knowledge sharing in the municipality Bocholt was learning culture. In view of the fact that employees scored only averagely on this measurement, learning culture could be improved to foster knowledge sharing. Additionally, supportive communication climate seemed to be an important factor in knowledge sharing as well. No positive relation between intrinsic motivation to share knowledge and knowledge sharing was found, neither was there a mediation effect of affective commitment found. Nevertheless, there are some limitations to this study, including a small sample size, which might explain these results.

### **Practical Implications**

The employees are highly motivated to share their knowledge, which is a good prerequisite for the knowledge management program. Deriving from the finding in this study that learning culture was strongly related to knowledge sharing, the knowledge management program should focus on improving the learning culture. An improvement in learning culture could serve as the first step towards an efficient knowledge management. Moreover, measurements should be taken to foster the supportive communication climate within the municipality.

## **Abstract**

Due to the current demographic change, the German municipality Bocholt suffers from an aging workforce. A large amount of qualified and experienced employees will retire in the near future, which could lead to a large-scale loss of knowledge. To save this valuable resource, it was decided to develop a knowledge management program. Therefore, this research project investigates the current knowledge sharing among employees with the aim to identify supporting factors. Consequently, the first research question was whether learning culture, supportive communication climate, and intrinsic motivation to share knowledge predict knowledge sharing. The second research question was whether affective commitment mediates the relation between supportive communication climate and knowledge sharing. It was hypothesized that learning culture, supportive communication climate, and intrinsic motivation to share knowledge would positively relate to knowledge sharing. Furthermore, a mediation effect for affective commitment on the relation between supportive communication climate and knowledge sharing was expected. Employees in high-responsibility functions who will retire in the next years were invited to participate in the online survey. The results revealed that learning culture could best predict knowledge sharing. Supportive communication climate was found to be marginally significant and intrinsic motivation to share knowledge did not positively relate to knowledge sharing. Moreover, no mediation effect for affective commitment was found. Limitations of this study, as well as the study's implications for the municipality Bocholt, are discussed and suggestions for future research are outlined.

*Keywords:* knowledge sharing, knowledge management, learning culture, affective commitment, supportive communication climate, intrinsic motivation

## Introduction

Knowledge is one of the most valuable resources of modern times (Kommunale Gemeinschaftsstelle für Verwaltungsmanagement, 2001; Moustaghfir & Schiuma, 2013). The new information age and the shift towards a knowledge economy have made this resource increasingly important for the success of organizations (Jelenic, 2011). It can serve as a competitive advantage for individuals and companies facing the challenges of today's global market (Holsapple & Joshi, 2002; Moustaghfir & Schiuma). The increasing importance of knowledge has led to an increasing attention to this topic. The fact that the failure to share knowledge is estimated to cost the Fortune 500 companies \$31.5 billion annually (Babcock, 2004) highlights the economic importance of this topic.

Consequently, the management of this precious resource has become the focus of attention of many human resource managers. Accordingly, knowledge management has become a popular term in scientific literature (Roumois, 2013, Wilson, 2002). Knowledge management is defined as the management of business-critical knowledge in the light of organizational goals. It consists of various processes, including the development, organization, diffusion, and usage of knowledge (David Skyrme Associates, 2011).

Awareness of the importance of knowledge has not only increased in companies and scientific literature, but also in the public sector, as, for instance, in municipalities (Arora, 2011; Roumois, 2013). In 2001, a report on knowledge management in municipal administrations was published by the German 'Communal Joint Office for Administrative Management' (Kommunale Gemeinschaftsstelle für Verwaltungsmanagement, 2001). This report highlights the importance of knowledge management by stating that the usage of municipal knowledge has to be intensified and organized in order to solve complex problems in the future.

This paper focuses on the German municipality Bocholt, which has approximately 900 employees. This municipality is facing a loss of knowledge in the future due to a high

percentage of employees who are close to reaching the retirement age. To prevent the loss of this valuable resource, a knowledge management program is to be implemented. In order to develop an effective knowledge management program, the current situation in terms of knowledge transfer from older employees to their younger colleagues was examined first.

### **Theoretical Framework**

**Knowledge.** The term knowledge is difficult to define (Lehner, 2012), which is why there are various scientific definitions of this term. For the purposes of the present research, the definition used by the ‘Communal Joint Office for Administrative Management’ (Kommunale Gemeinschaftsstelle für Verwaltungsmanagement, 2001) will be used.

According to this definition, knowledge is “a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information” (Davenport & Prusak, 1998, p. 4).

Knowledge derives from and is used in the minds of people. In organizations, it can be found in the form of documents or organizational processes (Davenport & Prusak, 1998).

As Davenport and Prusak (1998) indicate in their definition, knowledge develops in the minds of individuals. Consequently, employees with a long work experience have developed a large amount of knowledge during their career. Hence, these employees serve as a valuable resource of knowledge. The loss of this knowledge due to retirement can be a serious problem with severe consequences (Coffey & Hoffman, 2003). Thus, it is of outermost importance that older employees share their knowledge with their colleagues to prevent the loss of this precious resource.

**Knowledge sharing.** Knowledge sharing can be defined as “the transfer of knowledge among individuals, groups, departments, and organizations” (Zhang & Jiang, 2015, p.1).

Some authors categorize knowledge sharing into different processes, such as knowledge donating and knowledge collecting (van den Hooff & de Leeuw van Weenen, 2004). While knowledge donating refers to the process of sharing one’s knowledge with someone else,

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knowledge collecting refers to the process of asking others to share their knowledge with oneself. For the purpose of the present research, it was particularly important to examine the process of knowledge donating. Due to the high amount of employees who will retire in the next years, it was crucial to investigate the factors that influence this group's knowledge donating. In the literature, the terms knowledge donating and knowledge sharing are often used interchangeably or no distinction is made between them at all. Therefore, the more popular term 'knowledge sharing' will be used in this paper.

In order to develop an effective knowledge management program that fosters knowledge sharing, this research project aimed to examine the current situation in the municipality. The intention was to identify the factors which relate to employees' knowledge sharing with their colleagues.

**Culture.** Knowledge transfer and, hence, knowledge sharing always occur in a social context (Alavi, Kayworth, & Leidner, 2005; Schnell, Held, & Scherer, 2005); in fact, it is a truly social process. Consequently, it is important to examine the organizational culture to investigate whether this culture supports the transfer of knowledge. Organizational culture is defined as "the set of shared values, beliefs, and norms that influence the way employees think, feel, and behave toward each other and toward people outside the organization" (George & Jones, 2012, p. 528). Previous research supports the idea that organizational culture plays an important role in knowledge management (Bell DeTienne & Jackson, 2001; Wong & Aspinwall, 2005). Janz and Prasarnphanich (2003) assume that organizational culture is the most important contributor to an effective knowledge management. It influences organizational values and beliefs and can thus affect the creating and sharing of knowledge.

A specific form of organizational culture is learning culture, which can be defined as "a culture oriented towards the promotion and facilitation of learning by its employees. It encourages the sharing and spreading of what is learned, aiming at the development and success of the organization" (Rebelo, 2006, as cited in Schmitz, Rebelo, Gracia & Tomás,



2014, p. 114). A learning culture has been described as being essential for a learning organization and is defined by its ability to transfer knowledge (Rebelo & Duarte Gomes, 2011; Goh, 2002). Egan, Yang and Bartlett (2004) have found learning culture to influence employees' motivation to transfer learning. More specifically, learning culture has been found to be an important prerequisite for the establishment of an effective knowledge management program; specifically, it has been found to be positively related to the implementation of formal and informal knowledge management practices (Lehner, 2012; Schmitz et al., 2014,). Therefore, the following hypothesis was formulated:

*Hypothesis 1: Learning culture is positively related to knowledge sharing.*

**Communication climate.** As stated above, knowledge transfer is a social process, which makes it likely that the quality of communication will affect knowledge sharing (van den Hooff & de Ridder, 2004). Indeed, prior research has found a positive relation between communication and knowledge sharing among employees in the private and public sectors (Ismail Al-Alawi, Al-Maarzoqi, & Mohammed, 2007). Moreover, several communication dimensions (including communication style and communication satisfaction) have been found to be strongly related to knowledge sharing (Gumus, 2007).

One important aspect in this context is the employees' perception of the communication. The so-called communication climate can be defined as the employee's perception of the quality of the communication and the quality of the relationships in an organization (Bartels, Pruyn, De Jong, & Joustra, 2007). Moreover, communication climate concerns the perception of the acceptance of certain communication behaviors within an organization (van den Hooff & de Ridder, 2004).

Communication climate can be broadly categorized into two different forms: supportive and defensive. A supportive communication climate is characterized by an open

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sharing of knowledge with colleagues who are willing to share their knowledge with each other (van den Hooff & de Ridder, 2004). By contrast, a defensive communication climate is characterized by employees keeping their information to themselves and avoiding to openly voice their own opinion (Larsen & Folgerø, 1993). Van den Hoof and de Ridder (2004) found a supportive communication climate to be a key variable, in that it related to both forms of knowledge sharing: knowledge donating and knowledge collecting. Therefore, it can be hypothesized that a supportive communication climate will encourage employees to share their knowledge. Consequently, the following hypothesis was formulated:

*Hypothesis 2: Supportive communication climate is positively related to knowledge sharing.*

**Motivation to share knowledge.** In addition to the interpersonal circumstances that encompass knowledge transfer, there is also a more personal factor, namely, employees' motivation to share their knowledge. After all, without a strong personal motivation, people are unlikely to share their knowledge with their colleagues (Stenmark, 2000). Bock and Kim (2002) state that knowledge sharing is often unnatural, as knowledge can be so important and valuable to people that they try to avoid sharing it with others. That is, if an employee possesses knowledge that might be important for the organization, the employee could use this knowledge to get a promotion. In this case, it is not very likely that he or she is motivated to share this knowledge with colleagues. Motivation, thus, plays an important role in knowledge sharing. Lin (2007) regards it as one of the key factors that influence knowledge sharing between individuals in organizations. Previous research has also found that people sharing their knowledge voluntarily vary from their non-sharing peers in the factors that motivate them to share their knowledge. Knowledge sharers act mainly on the basis of intrinsic motivation, whereas their passive peers share their knowledge mostly on the basis of extrinsic motivation (Lai & Chen, 2014).

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Therefore, intrinsic motivation seems to be the more meaningful motivation for knowledge sharing (Lai & Chen, 2014). Two intrinsic motives are knowledge self-efficacy and enjoyment in helping others (Lin, 2007). By sharing their knowledge with their colleagues, employees can improve their knowledge self-efficacy which makes them feel satisfied (Lin, 2007). Enjoyment in helping others, on the other side, is closely related to the concept of altruism. Previous research has shown that employees enjoy helping others by sharing their knowledge with them (Lin, 2007; Yu, Lu, & Liu, 2010). Consequently, the following hypothesis was formulated:

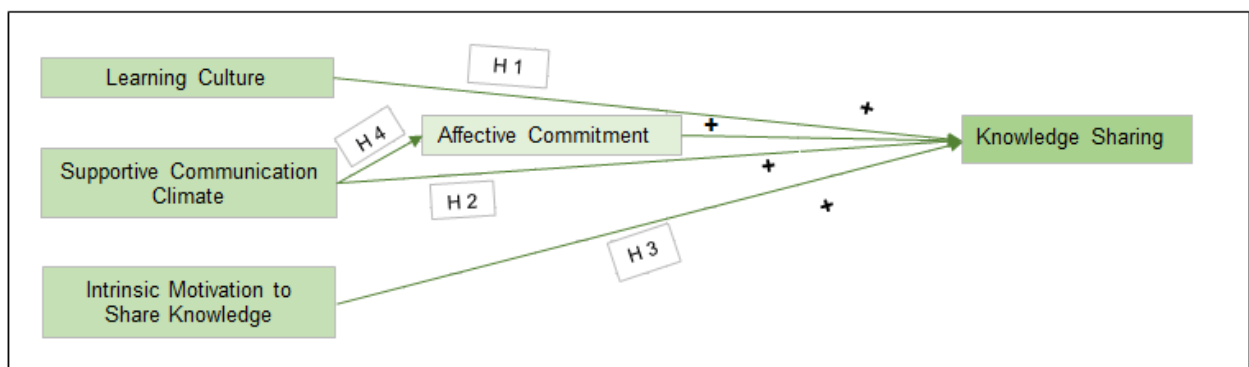
*Hypothesis 3:* Intrinsic motivation to share knowledge is positively related to knowledge sharing.

**Commitment.** Organizational commitment is an attitudinal variable that emphasizes the attachment of an employee to his or her organization (Spector, 2012). An important type of commitment is affective commitment (Allen & Meyer, 1990; Spector 2012). In particular, the affective component of organizational commitment has been found to be related to knowledge sharing (van den Hooff & de Ridder, 2004). It can be defined as employees' emotional connection with the organization and their identification and dedication to their organization (Allen & Meyer, 1990). Past research shows that employees' commitment is affected by the amount of information they get about their working environment, as well as by the possibility to engage in communication (van den Hooff & de Ridder, 2004). Consequently, communication climate is an important prerequisite for employees' commitment (Postmes, Tanis, & de Wit, 2001). Moreover, affective commitment has been found to be positively related to knowledge sharing and appears to be an important part of a knowledge sharing culture (van den Hooff & de Ridder 2004). Hence, the following hypothesis was formulated:

*Hypothesis 4:* Affective commitment mediates the relation between supportive communication climate and knowledge sharing.

### The Current Study

The current study aimed to answer the following questions: (1) Do learning culture, supportive communication climate, and intrinsic motivation to share knowledge predict knowledge sharing? (2) Does affective commitment mediate the relation between supportive communication climate and knowledge sharing? The predicted relations are depicted in Figure 1. In order to answer the research questions, soon-to-retire employees of the municipality Bocholt participated in a survey which measured these factors. Given the theoretical knowledge about this topic, it is important to measure the discussed factors in order to investigate whether these factors contribute to the sharing of knowledge in the municipality. This study extends previous research in that it focuses on employees in the public sector. Previous research has mostly focused on employees in the private sector; therefore, the present study can enhance our understanding of knowledge sharing in a different group of employees. Moreover, our results can help gaining insights into the current state of knowledge sharing in the municipality Bocholt, which can be used for the development of an effective knowledge management program.



**Figure 1.** Hypothetical Model of the Relations between the Different Factors

## Methods

### Participants

**Inclusion criteria.** The first inclusion criterion was the current function. It was chosen to only examine employees in functions with a high amount of responsibility and qualification<sup>1</sup>. This was done for several reasons. First, there are numerous different functions in the municipality Bocholt. Consequently, there are also many different types of knowledge, which could possibly lead to heterogeneous and poorly interpretable results. Second, employees in these functions have a high amount of knowledge and knowledge plays an important role in their job.

The second inclusion criterion was the time remaining until retirement. To get a sufficient amount of participants, it was decided to include the employees who will retire in the next 17 years (2016-2032). This would lead to a total sample size of 133. Regarding the fact that a sample size of 77 participants would be needed in order to achieve a power of .80 ( $p = .05$ ,  $f^2 = .15$ ; Faul, Erdfelder, Lang, & Buchner, 2007) and that the response rate in previous studies in the municipality Bocholt has been low (59%; te Wilde, 2014), it was decided that this number of participants would probably lead to a sufficient sample size.

**Sample.** Based on these inclusion criteria, 133 participants were contacted of whom 115 started filling out the questionnaire. The final sample included 76 employees of the municipality Bocholt which corresponds to a response rate of 57.14%. (22 women, 54 men,  $M$  age = 54.03 years, age range: 40-61 years). The remaining time until retirement varied between 1 and 17 years ( $M$  years until retirement = 9.78). Most of the participants had a university degree ( $N = 54$ ).

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<sup>1</sup> Payment groups: A 10-15, EG 9-15, S 11-17

## Materials

The materials of this study consisted of questions on the employees' demographic background and multiple questionnaires, which were filled in online using theistools (www.theistools.com). If a questionnaire was not available in German, it was translated using the back-translation method (Sperber, 2004). This means that the English questionnaire was translated into German by the researcher. The German questionnaire was then given to an independent professional English speaker in order to translate the questionnaire back to English. In the end, the researcher compared both versions and corrected mistakes in the German translation.

**Demographic background.** Participants had to answer demographic questions concerning their age, gender (male, female), educational background (secondary school degree<sup>2</sup>, high school degree, Bachelor degree, Master degree, vocational training, PhD degree), work experience (0-5, 5-10, 10-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50 years), retirement plans (2016 – 2032) and current function (A 10-15, EG 9-15, S 11-17).

It was chosen to select age as a control variable, as this measurement is closely related to the date of retirement. Older employees are likely to be aware of the fact that they will retire soon and may be more aware of the necessity to share their knowledge with their colleagues. This might affect their knowledge sharing behavior. Moreover, Conelly and Kelloway (2003) argue that older employees have a larger network which makes knowledge sharing among this group of employees more likely.

## Questionnaires.

*Short version of the dimensions of the learning organization questionnaire.* To examine organizational learning culture, the short version of the Dimensions of the Learning Organization Questionnaire (DLOQ) was used (see Appendix A; Marsick & Watkins, 2003;

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<sup>2</sup> Divided into „Hauptschule“ and „Realschule“

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Yang, 2003). The DLOQ includes seven dimensions: (1) continuous learning, (2) inquiry and dialogue, (3) collaboration and team learning, (4) create systems, (5) empower people, (6) connect the organization, and (7) strategic leadership. In total, the short version of the DLOQ consists of 21 items (of the original 49 items), which are rated on a 6-point Likert scale (ranging from 1 = almost never to 6 = almost always). An example item is: “In my organization, people openly discuss mistakes in order to learn from them”. Ellinger, Ellinger, Yang and Howton (2002) indicate that the DLOQ has sufficient validity. The reliability of all scales was sufficient (see Table 1), which corresponds to previous research finding an overall reliability of .93 (Yang, 2003).

***Organizational Commitment Questionnaire.*** To examine the affective commitment of the employees, the German version of the Organizational Commitment Questionnaire (OCQ; see Appendix B; Kanning & Hill, 2014) was used. The OCQ consists of 15 items that are rated on a 5-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). An example item is: “I feel very little loyalty to this organization”. There is scientific evidence for a good construct validity of the OCQ (Maier & Woschée, 2014). The reliability of this scale was found to be sufficient (see Table 1), which is in line with the results of previous research (Kanning & Hill, 2014;  $\alpha$  varied between .82 to .93).

***Questions to measure intrinsic motivation to share knowledge.*** In order to measure employees’ intrinsic motivation to share their knowledge, questions derived from Lin (2007) were used (see Appendix C). In total, 12 items assessed knowledge self-efficacy and enjoyment in helping others. All 12 items are rated on a 7-point Likert scale (ranging from 1 = strongly disagree to 7 = strongly agree). “It feels good to help someone by sharing my knowledge” is an example item. In this study, knowledge self-efficacy and enjoyment in helping others were combined to measure intrinsic motivation. The reliability was found to be adequate (see Table 1), which corresponds to previous research by Lin (2007;  $\alpha = 0.86$  for knowledge self-efficacy and  $\alpha = 0.84$  for enjoyment in helping others).

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**Questions to measure the communication climate.** For the purpose of measuring the communication climate, the four items developed by van den Hooff and de Ridder (2004) were used (see Appendix D); these items have to be rated on a 5-point Likert scale. An example item is: “I have informal contact to my colleagues on a regular basis”. The reliability analysis revealed that the scale’s reliability is somewhat below the accepted level of .70 (see Table 1). This is in line with previous research (van den Hoof & de Ridder, 2004;  $\alpha = 0.61$ ).

**Knowledge management scan.** To measure current knowledge sharing, the knowledge-donating scale of the Knowledge Management Scan was used (van den Hooff & de Ridder, 2004; see Appendix E). It consists of six items that have to be rated on a 5-point Likert scale. An example item is: “I share the information I have with colleagues outside of my department”. The reliability of this questionnaire was found to be sufficient (see Table 1), which corresponds to previous research (van den Hooff & de Ridder, 2004;  $\alpha = .85$ ).

Table 1 depicts Cronbach’s alpha for all scales.

Table 1

*Reliability Coefficients*

|   | $\alpha$ |
|---|----------|
| Learning Culture                        | .953     |
| Affective Commitment                    | .884     |
| Intrinsic Motivation to Share Knowledge | .819     |
| Supportive Communication Climate        | .676     |
| Knowledge Sharing                       | .773     |

### Procedure

First, all eligible employees were contacted via a letter by one of the personnel developers of the municipality Bocholt and invited to participate in the current study. The



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invitees were given information on the purpose of the study and information to access the online questionnaire. Several days later, they were sent an email reminder, which included an online link to the study.

In the survey's introduction, the participants found information on the conditions of participation, including their anonymity and the possibility to stop participation at any time without having to state a reason. Furthermore, the researcher's email was given to the participants to enable them to get in contact and ask questions. Having read the given information, participants first answered the questions about their demographic background. Afterwards, the questionnaires were presented in the following order: Short version of the DLOQ, Organizational Commitment Questionnaire, questions to measure the intrinsic motivation to share knowledge, questions to measure the communication climate, and Knowledge Management Scan. Finally, participants were thanked for their participation and given the possibility to sign up to receive a report on the research results. The participants received no financial compensation for their participation. After two and three weeks, email reminders were sent to the participants.

### **Statistical Analysis**

In this study, three independent variables were measured: learning culture, supportive communication climate, and intrinsic motivation to share knowledge. The dependent variable was knowledge sharing. Moreover, affective commitment was a mediator variable in the relationship between supportive communication climate and knowledge sharing. All variables were quantitative.

First, the data were cleaned. 37 participants who only answered the demographic questions were removed from the dataset. By using casewise diagnostics, two cases with standardized residuals of more than three standard deviations away from the mean were detected (Phaobunjong & Popescu, 2003; Wiggins 2000). Consequently, these two cases were defined as outliers. It was found that these outliers damaged the regression equation.

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Therefore, it was tested whether they hindered the understanding of the model by comparing analyses with and without these outliers. Results revealed that these cases indeed hindered the understanding of the model which is why they were deleted from the dataset, as advised by statisticians (Evans, 1999). After this step 76 participants out of 115 participants remained.

A reliability analysis was carried out to detect the items that weakened the reliability of the scales. In case an item weakened the scale, it was deleted (Ellis, 2013; see Appendix F for a list of deleted items). However, not more than 20% of the total number of items was deleted (Radhakrishna, 2007). In the questions about communication climate, over 20% of the items had to be deleted to raise the reliability coefficient closer to the accepted level of .70 (Radhakrishna). Due to the small sample size, no factor analysis could be performed (Gorsuch 1983, as cited in MacCallum, Widaman, Zhang, & Hong, 1999).

Afterwards, mean scores were calculated of the (if necessarily reversed items). In order to prevent the loss of valuable data, it was chosen to use the multiple imputation function in SPSS with 10 iterations. This method is advised over the more popular listwise deletion of data by statisticians, which can lead to a biased statistical inference (e.g. Fichman & Cummings, 2003). Multiple imputation includes the simulation of missing data given the available information (Fichman & Cummings, 2003).

After having imputed the data, a correlation analysis was executed including all five factors and the control variable. Next, a stepwise multiple regression analysis with knowledge sharing as the criterion was executed. The predictors were entered step-wise and in the following order: age (as control variable), learning culture, supportive communication climate, and intrinsic motivation to share knowledge. In order to analyze the mediation effect of affective commitment, bootstrapping was used. This was done using the PROCESS-macro developed by Hayes (2008).

**Results**

**Descriptive Statistics and Correlation Analysis**

Table 2 depicts the descriptive statistics of all involved factors. The means of the original data are reported, as well as the means of the pooled imputed data. Participants scored averagely on learning culture ( $M_{pooled} = 3.31$ ), affective commitment ( $M_{pooled} = 3.54$ ), and knowledge sharing ( $M_{pooled} = 3.32$ ). They scored relatively high on supportive communication climate ( $M_{pooled} = 4.22$ ) and intrinsic motivation ( $M_{pooled} = 5.88$ ).

Table 2  
*Descriptive Statistics*

|                                     | <i>Range</i> | <i>M (pooled)</i> | <i>M (original)</i> | <i>SD(original)</i> |
|-------------------------------------|--------------|-------------------|---------------------|---------------------|
| Learning Culture                    | 1 – 6        | 3.31              | 3.33                | 0.86                |
| Affective Commitment                | 1 – 5        | 3.54              | 3.57                | 0.61                |
| Intrinsic Motivation                | 1 – 7        | 5.88              | 5.90                | 0.71                |
| Supportive<br>Communication Climate | 1 – 5        | 4.22              | 4.25                | 0.62                |
| Knowledge Sharing                   | 1 – 5        | 3.32              | 3.38                | 0.60                |

Table 3 presents the results of the correlation analysis. Knowledge sharing was significantly correlated with all other variables, except for the control variable age.

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Table 3

*Correlations between Age, Learning Culture, Affective Commitment, Intrinsic Motivation to Share Knowledge, Supportive Communication Climate, and Knowledge Sharing based on the Pooled Data*

|    | A     | LC     | CC     | MO     | AC     | KS |
|----|-------|--------|--------|--------|--------|----|
| A  |       |        |        |        |        |    |
| LC | -.051 |        |        |        |        |    |
| CC | .085  | .396** |        |        |        |    |
| MO | -.027 | .435** | .328** |        |        |    |
| AC | .001  | .641** | .257** | .473** |        |    |
| KS | -.013 | .634** | .439** | .394** | .469** |    |

\*  $p < .05$ ; \*\*  $p < .01$

*Note.* A = Age, LC = Learning Culture, AC = Affective Commitment, MO = Intrinsic Motivation, CC = Supportive Communication Climate, KS = Knowledge Sharing

### Multiple Regression Analysis

The results of the multiple regression analysis are presented in Table 4. Model 3 (age, learning culture, and supportive communication climate) could best predict the variance in knowledge sharing, explaining 37.5% to 49.1% of variance. In this model, learning culture was the only significant predictor ( $p = .000$ ,  $B = .416$ , Std. Error = .086 in the pooled data). Supportive communication climate was a marginally significant predictor ( $p = .057$ ,  $B = .213$ , Std. Error = .111 in the pooled data).

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Table 4

*Results of the stepwise Multiple Regression Analysis in the imputed Data*

|                       | Model 1<br>(A)   | Model 2<br>(A, LC) | Model 3<br>(A, LC, CC)   | Model 4<br>(A, LC, CC, MO) |
|-----------------------|------------------|--------------------|--------------------------|----------------------------|
| R <sup>2</sup>        | .000 - .002      | .358 - .464        | .375 - .491              | .404 - .492                |
| R <sup>2</sup> Change | .000 - .004      | .376 - .463        | .015 - .065              | .001 - .029                |
| Sig. F Change         | .618 - .948      | .000 - .000        | .007 - .189 <sup>a</sup> | .078 - .710                |
| A                     | <i>B</i> = -.002 | <i>B</i> = .003    | <i>B</i> = .000          | <i>B</i> = .000            |
| LC                    |                  | <i>B</i> = .480**  | <i>B</i> = .416**        | <i>B</i> = .386**          |
| CC                    |                  |                    | <i>B</i> = .213          | <i>B</i> = .190            |
| MO                    |                  |                    |                          | <i>B</i> = .103            |

\*  $p < .05$ ; \*\*  $p < .01$

*Note.* A = Age, LC = Learning Culture, CC = Supportive Communication Climate, MO = Intrinsic Motivation.

<sup>a</sup> Only two of the ten analyses were non-significant.

### Mediation Analysis

Due to the fact that PROCESS cannot deal with multiple imputation, 10 separate analyses were carried out with a bootstrapping sample of 5.000 (Gould & Pitblado, 2015). Affective commitment served as the mediator, supportive communication climate as the predictor, and knowledge sharing as the criterion.

In the first step of the mediation analysis, the regression of supportive communication climate on knowledge sharing, ignoring the mediator affective commitment, was significant in all 10 analyses (*b* varied between .4124 to .4875, *t*(70) varied between 3.42 to 4.70, *p* varied between .000 to .001, for the exact data see Appendix G).

In the second step of the mediation analysis, the regression of supportive communication climate on the mediator affective commitment was found to be significant in

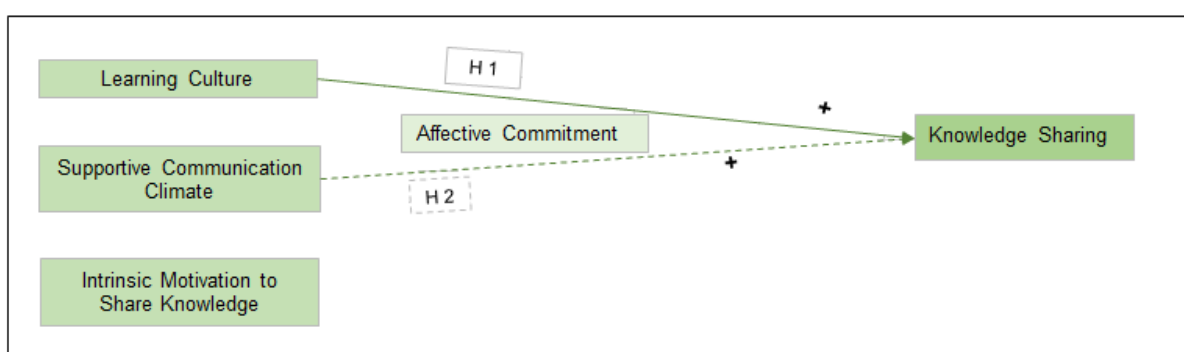
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8 of the 10 analyses ( $b$  varied between 0.1835 to 0.3299,  $t(70)$  varied between 1.58 to 2.85,  $p$  varied between .006 to .119, for the exact data see Appendix H).

In the third step of the mediation analysis, the mediator affective commitment, controlling for supportive communication climate, was found to be significant in all analyses ( $b$  varied between .2693 to .4524,  $t(70)$  varied between 2.52 to 4.54,  $p$  varied between .000 to .003, for the exact data see Appendix I).

In the fourth step of the analysis, it was found that supportive communication climate, controlling for the mediator affective commitment, was a significant predictor of knowledge sharing in all analyses ( $b$  varied between .2609 to .3769,  $t(69)$  varied between 2.61 to 4.02,  $p$  varied between .000 to .009, for the exact data see Appendix J).

In the last step, it was found that in five of the ten analyses, the bootstrap confidence intervals contained zero (for the exact bootstraps, see Appendix K). Due to the fact that half of the analyses did not show a significant effect, the null hypothesis was not rejected. Therefore, it can be concluded that affective commitment did not mediate the relation between supportive communication climate and knowledge sharing. Figure 2 summarizes the results.



**Figure 2.** Found Relations between Learning Culture, Supportive Communication Climate, Intrinsic Motivation to Share Knowledge, Affective Commitment, and Knowledge Sharing. Arrows display significant relations. Dashed arrows represent marginally significant relations.

### Discussion

In times of demographic change, storage of knowledge and sharing of this precious resource become increasingly important. To prevent the loss of knowledge due to the retirement of older employees, knowledge sharing should be a central element of sustainable human resources strategies. Hence, it is important to investigate which factors contribute to the sharing of knowledge. The present research project aimed to answer the question whether learning culture, supportive communication climate, and intrinsic motivation to share knowledge predict knowledge sharing. Moreover, our aim was to answer the question whether affective commitment mediates the relation between supportive communication climate and knowledge sharing.

The results of the present study suggest that learning culture, together with supportive communication climate, explained more than a third of the variance in knowledge sharing. However, only learning culture was a significant predictor of knowledge sharing. Supportive communication climate was found to be marginally significant in the regression analysis and showed a positive relation to knowledge sharing in the mediation analysis. Moreover, it was found that intrinsic motivation to share knowledge did not positively relate to knowledge sharing and that affective commitment did not mediate the relation between supportive communication climate and knowledge sharing.

In sum, Hypothesis 1 was supported by the results of the present research project. In line with previous findings (e.g., Schmitz et al., 2014), learning culture indeed positively related to knowledge sharing in this study. Employees, who perceive the organizational culture as a learning culture, share more knowledge than colleagues who do not perceive the culture as a learning culture. This confirms previous research, which identified a knowledge-friendly culture as one of the two most critical success factors for knowledge-management adoptions in small and medium-sized enterprises (Wong & Aspinwall, 2005).

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Hypothesis 2 was partly confirmed by the findings of this study. In the multiple regression analysis, supportive communication climate was found to be marginally significantly related to knowledge sharing. Moreover, the mediation analysis showed that there was a positive relation between supportive communication climate and knowledge sharing. The inconsistent results might be caused by the lack of power in the analysis with several predictors. It seems as if supportive communication climate was positively related to knowledge sharing. However, due to inconsistent results, no definite conclusion can be drawn on this relation. Previous research corresponds to this finding in that not all studies have found positive relations between these factors. For instance, Park, Vertinsky, and Lee (2012) could not find a relation between communication and tacit knowledge transfer. However, many other studies report a positive relation between communication climate or communication and knowledge sharing (e.g., van den Hooff & de Ridder, 2004; Islam, Hasan, Ahmed, & Ahmed, 2011; Ismail Al-Alawi, Yousif Al-Marzooqi & Fraidoon Mohammed, 2007). One possible explanation for this result might be the method of measurement. The questions asked about communication climate dealt with the frequency of formal and informal contact between colleagues and the possibility to ask questions to colleagues or superiors. It is possible that these communication possibilities are not used for knowledge transfer in the first place, but that knowledge transfer occurs via different ways (e.g., via emails).

Hypothesis 3 was not confirmed by our findings: intrinsic motivation to share knowledge did not positively relate to knowledge sharing. Remarkably, employees scored very high on intrinsic motivation to share knowledge. It appears that the participants were highly motivated to share their knowledge. The possibility of a ceiling effect may explain that no significant relation between intrinsic motivation to share knowledge and knowledge sharing could be found (Ho & Yu, 2015). Another possible explanation might be the motives used to measure motivation. The variable used in this study contains the motives knowledge self-efficacy and enjoyment in helping others. It might be due to these two motives that no



significant relation was observed. Other studies using different motives (e.g., environmental factors, personal factors, interpersonal factors, and socio-cultural factors) have found motivation to be significantly related to knowledge sharing (Matschke, Moskaliuk, Bokhorst, Schümmer, & Cress, 2014)

Finally, Hypothesis 4 was also not supported, indicating that affective commitment does not mediate the relation between supportive communication climate and knowledge sharing. This finding is not in line with previous research (van den Hooff & de Ridder, 2004). However, affective commitment was related to supportive communication climate, as well as to knowledge sharing. These findings correspond to earlier studies that have found communication climate and communication to be related to commitment (van den Hooff & de Ridder, 2004; van Vuuren, de Jong, & Seydel, 2007). Moreover, affective commitment was also related to knowledge sharing, which is also in line with previous research (Casimir, Lee, & Loon, 2012; van den Hoof & de Ridder, 2004). Due to the equivocal results of the bootstrapping analysis, no definite conclusion could be drawn on the mediating relation between affective commitment and knowledge sharing.

### **Limitations and Future Research**

One limitation of this study is the small sample size. This could be one reason for the insignificant results found in this study. The low power could be an explanation for the fact that the results regarding supportive communication climate differed in the analyses. The small sample size results from a high drop-out rate, which could have been caused by one of the following reasons. First, employees were not convinced that full anonymity was provided. Second, several participants stated that some of the questionnaires were not applicable to the municipality. This could be due to the fact that they were originally developed for the use in organizations in the private sector.

In order to achieve higher response rates, these problems should be addressed in the design of future studies. Instead of contacting employees via email, researchers should hand

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out paper versions of their surveys in person. Participants would then be able to immediately ask upcoming questions (about anonymity or understanding). Moreover, it is necessary to improve the questionnaire's lacking applicability. Future research should use questionnaires that have been tailored for the use in municipalities or develop new questionnaires. These measurements could help to increase the response rate, which could, in turn, prevent non-response bias and potential distortion of the results

Furthermore, it must be noted that this study was non-experimental, meaning that no causal conclusions can be drawn. Due to the nature of the examined factors and the aim of this project, an experimental set-up would not be appropriate. However, this design makes the occurrence of social desirability possible (Krumpal, 2013). Knowing that the data of this study would be analyzed to draw conclusions about the current knowledge sharing in the municipality could have affected participants' answers to the questions. Recruiting a larger sample or conducting longitudinal studies could help ensure a greater robustness of results.

To deepen our understanding of knowledge sharing, it could be of great value to more closely investigate the process of knowledge sharing. This study used a six-item questionnaire to measure knowledge sharing. However, not only the quantity, but also the quality of knowledge sharing is important for an effective knowledge transfer. One possible study design could be to use a more explorative design investigating various characteristics of knowledge sharing. Employees could be given the possibility to answer these questions in detail.

Moreover, it would be interesting to examine the personal characteristics of those who share their knowledge (Matzler & Mueller, 2011). This direction of research could be used to identify which individuals are likely to share their knowledge and which are not. Being able to identify employees who are less likely to share their knowledge makes it possible to develop measurements specifically aimed to increase their knowledge-sharing behavior.

Furthermore, it might be interesting to investigate the factors that cause knowledge hiding in order to being able to create measurements to eliminate these factors (Connelly, Zweig, Webster, & Trougakos, 2012). One might perform a meta-analysis to identify possible factors and to examine their relation to knowledge sharing. Subsequently, one could develop and test measurements to remove these barriers.

In a more applied research setting, it might also be interesting to examine the effectiveness of different knowledge management programs. There are various recommendations on how to develop effective knowledge management programs (e.g., Bell DeTienne & Jackson, 2001), which could be tested in different organizations. Based on these findings, knowledge management programs could be compared on their efficiency.

### **Implications**

**Theoretical implications.** This study has several theoretical implications. However, due to the small sample size and the correlational nature of this study, the results and following implications have to be treated with caution. First, this study supports research on the importance of learning culture. Our results clearly show how important learning culture can be for the sharing of knowledge. Second, it also shows an interesting relation between motivation and behavior. Specifically, it was found that the employees are highly motivated to share their knowledge. However, motivation was not found to be positively related to knowledge sharing. This is an important finding in view of the fact that, in the literature, motivation and behavioral outcomes are generally considered to be closely related constructs (e.g., Reeve, 2008). Third, it also contributes to the research on employees in the public sector. Whereas previous research has mainly focused on employees working in companies in the private sector, this study focused on municipal employees. They differ in important aspects from employees in the private sector. That is, they usually spend their entire career working for the municipality, whereas the employees in the private sector typically work only for a certain period for one company. If one is to investigate knowledge sharing of older

employees, this can be an important difference. Municipal employees might have a different relation to their employer than the employees in the private sector. For instance, public employees are generally more committed than private sector employees (Bullock, Stritch, & Rainey, 2015). This might also have consequences for their knowledge-sharing behavior.

**Practical implications.** The findings of this study can help to develop an effective knowledge management program not only for the municipality Bocholt, but also for other municipalities and institutions of the public sector. The fact that learning culture was found to be positively related to knowledge sharing can be important for the establishment of a knowledge management program. Previous research has shown that learning culture is an important factor in the implementation of such programs (Bell DeTienne & Jackson, 2001; Janz & Prasanpharnich, 2003). The fact that the employees of the municipality Bocholt perceive learning culture as average leaves room for further improvement. Measurements should be taken to create a more learning and knowledge-friendly culture. Especially, the management's and leader's attitude and behavior towards knowledge management is important for the establishment of such a program. Moreover, it is necessary to create situations where learning is promoted and to ensure the presence of a team climate of mutual trust (Henderson, Briggs, Schoonbeek, and Paterson, 2011). Accordingly, it is also worthwhile to consider the communication climate. In the municipality Bocholt, the communication climate was found to be very supportive. However, attempts can be made to further improve this climate.

The fact that the employees were found to be highly intrinsically motivated to share their knowledge with their colleagues is a good prerequisite for the establishment of a successful knowledge management program. Financial resources are scarce in nearly all institutions of the public sector. Having intrinsically motivated employees makes financial rewards unnecessary, which is an important fact for government institutions.

### **Conclusion**

This study examined which factors positively relate to knowledge sharing in the municipality Bocholt. It was found that employees are highly intrinsically motivated to share their knowledge and that the communication climate is perceived as very supportive. Moreover, our results suggest that, while learning culture is positively related to knowledge sharing, not all employees rate the organizational culture as learning. Additionally, supportive communication climate seemed to be related to knowledge sharing. Transferring the culture into a learning culture and fostering a supportive communication climate can thus be important for the successful implementation of a knowledge management program within the municipality.

## ACKNOWLEDGMENT

First of all, I would like to thank my supervisor Michelle for her extraordinary support and effort during the process of my research project. Without her valuable feedback this paper would be of a much lesser quality. I would also like to thank my external supervisor, Kirsten Terliesner, for her warm words when things turned out much more complicated than I had expected. Her friendly and positive character have paid a large contribute to the development of this paper.

Besides the extraordinary professional supervision I received, I was also strongly supported by my family, especially by my parents. Thank you for your unconditional love, support and patience. I would never have made it without you and could not have asked for a better family. Moreover, I would also like to thank my friends who supported me during the process of my research project. I would like to highlight the support I received from my friend Sabrina who has reviewed my paper repeatedly and listened to my sorrows and frustrations without complaining. I am sure I would have had much more nervous breakdowns, if I did not have such a loyal and helpful friend like you – it is good to know I have such a true friend in my life.

**References**

- Alavi, M., Kayworth, T. R., & Leidner, D. E. (2005). An empirical examination of the influence of organizational culture on knowledge management practices. *Journal of Management Information Systems*, 22, 191-224. doi: 10.2753/MIS0742-1222220307
- Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63, 1-18. doi: 10.1111/j.2044-8325.1990.tb00506.x
- Arora, E. (2011). Knowledge management in public sector. *Journal of Arts Science & Commerce*, 11, 165-171. Retrieved from [www.reachersworld.com/vol2/PAPER\\_17.pdf](http://www.reachersworld.com/vol2/PAPER_17.pdf)
- Babcock, P. (2004). Shedding light on knowledge management, *HR Magazine*, 49, 46-51. Retrieved from <http://www.shrm.org/publications/hrmagazine/editorialcontent/pages/0504-covstory.aspx>
- Bartels, J., Pruyn, A., De Jong, M., & Joustra, I. (2007). Multiple organizational identification levels and the impact of perceived external prestige and communication climate. *Journal of Organizational Behavior*, 28, 173-190. doi: 10.1002/job.420
- Bell DeTienne, K., & Jackson, L. A. (2001). Knowledge management: understanding theory and developing strategy. *Competitiveness Review: An International Business Journal*, 11, 1-11. doi: 10.1108/eb046415
- Bock, G. W., & Kim, Y. G. (2002). Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. *Information Resources Management Journal*, 15, 14-21. doi: 10.4018/irmj.2002040102
- Bullock, J. B., Stritch, J. M., & Rainey, H. G. (2015). International comparison of public and private employees' work motives, attitudes, and perceived rewards. *Public Administration Review*, 75, 479-489. doi: 10.1111/puar.12356
- Casimir, G., Lee, K., & Loon, M. (2012). Knowledge sharing: influences of trust, commitment and cost. *Journal of Knowledge Management*, 16, 740-753. doi: 10.1108/13673271211262781
- Coffey, J. W. & Hoffman, R. R. (2003). Knowledge modeling for the preservation of institutional memory. *Journal of Knowledge Management*, 7(3), 38-52. doi:10.1108/13673270310485613

## KNOWLEDGE SHARING IN A GERMAN MUNICIPALITY

- Connelly, C. E., & Kelloway, K. E. (2003). Predictors of employees' perceptions of knowledge sharing cultures. *Leadership & Organization Development Journal*, 24, 294-301. doi: 0.1108/01437730310485815
- Connelly, C. E., Zweig, D., Webster, J., & Trougakos, J. P. (2012). Knowledge hiding in organizations. *Journal of Organizational Behavior*, 33(1), 64-88. doi: 10.1002/job.737
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Retrieved from <https://online.ist.psu.edu/sites/ist852hellar/files/readings/T1-Chapter1.pdf>
- David Skyrme Associates (2011). *Definition*. Retrieved from [http://www.skyrme.com/km\\_basics/definition.htm](http://www.skyrme.com/km_basics/definition.htm)
- Egan, T. M., Yang, B., & Bartlett, K. R. (2004). The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human resource development quarterly*, 15, 279-301. doi: 10.1002/hrdq.1104
- Ellinger, A. D., Ellinger, A. E., Yang, B., & Howton, S. W. (2002). The relationship between the earning organization concept and firms' financial performance: An empirical assessment. *Human Resource Development Quarterly*, 13, 5-22. doi: 10.1002/hrdq.1010
- Ellis, J. (2013). Inleiding op klassieke latente variabelen modellen. Retrieved from [https://blackboard.ru.nl/bbcswebdav/pid-1670210-dt-content-rid-4439713\\_4/institution/SOW/SOW-PS/Courses/SOW-BPSPB20/Factoranalyse%2064.pdf](https://blackboard.ru.nl/bbcswebdav/pid-1670210-dt-content-rid-4439713_4/institution/SOW/SOW-PS/Courses/SOW-BPSPB20/Factoranalyse%2064.pdf)
- Evans, V. P. (1999, January). *Strategies for detecting outliers in regression analysis: An introductory primer*. Paper presented at the meeting of the Southwest Educational Research Association, San Antonio, TX.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. doi: 10.3758/BF03193146
- Fichman, M., & Cummings, J. M. (2003). Multiple imputation for missing data: making the best of what you know. *Organizational Research Methods*, 6, 282-308. doi: 10.1177/1094428103255532
- George, J. M., & Jones, G. R. (2012). *Understanding and managing organizational behavior*. Essex, England: Pearson Education Limited.
- Goh, S. C. (2002). Managing effective knowledge transfer: an integrative framework and some practice implications. *Journal of knowledge management*, 6, 23-30. doi: 10.1108/13673270210417664



## KNOWLEDGE SHARING IN A GERMAN MUNICIPALITY

- Gould, W., & Pitblado, J. (2015). How large should the bootstrapped samples be relative to the total number of cases in the dataset? *Stata Data Analysis and Statistical Software*. Retrieved from <http://www.stata.com/support/faqs/statistics/bootstrapped-samples-guidelines/>
- Gumus, M., 2007. The effect of communication on knowledge sharing in organizations. *Journal of Knowledge Management Practice*, 8. Retrieved from <http://www.tlinc.com/articl133.htm>
- Hayes, 2008. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: Guilford Press.
- Henderson, A., Briggs, J., Schoonbeek, S., & Paterson, K. (2011). A framework to develop a clinical learning culture in health facilities: ideas from the literature. *International Nursing Review*, 58, 196-202. doi: 10.1111/j.1466-7657.2010.00858.x
- Ho, A. D., & Yu, C. C. (2015). Descriptive statistics for modern test score distributions skewness, kurtosis, discreteness, and ceiling effects. *Educational and Psychological Measurement*, 75, 365-388. doi: 10.1177/0013164414548576
- Holsapple, C. W., & Joshi, K. D. (2002). Knowledge management: a threefold framework. *The Information Society*, 18, 47-64. doi: 10.1080/01972240252818225
- Islam, Z. M., Hasan, I., Ahmed, S. U., & Ahmed, S. M. (2011). Organizational culture and knowledge sharing: Empirical evidence from service organizations. *African Journal of Business Management*, 5, 5900-5909. doi: 10.5897/AJBM11.073
- Ismail Al-Alawi, A., Yousif Al-Marzooqi, N., & Fraidoon Mohammed, Y. (2007). Organizational culture and knowledge sharing: critical success factors. *Journal of knowledge management*, 11(2), 22-42. doi: 1108/13673270710738898
- Janz, B. D., & Prasarnphanich, P. (2003). Understanding the antecedents of effective knowledge management: The Importance of a knowledge-centered culture. *Decision Sciences*, 34, 351-384. doi: 10.1111/1540-5915.02328
- Jelenic, D. (2011). The importance of knowledge management in organizations – with emphasis on the balanced scorecard learning and growth perspective. In *Management, Knowledge and Learning, International Conference*. Retrieved from [http://dev-ekp.aif.org.my/uploads/THE\\_IMPORTANCE\\_OF\\_KNOWLEDGE\\_MANAGEMENT\\_IN\\_ORGANIZATION.pdf](http://dev-ekp.aif.org.my/uploads/THE_IMPORTANCE_OF_KNOWLEDGE_MANAGEMENT_IN_ORGANIZATION.pdf)
- Kanning, U. P., & Hill, A. (2014). Validation of the organizational commitment questionnaire (OCQ) in six languages. *Journal of Business and Media Psychology*, 4(2), 11-22. Retrieved from <http://journal-bmp.de/wp-content/uploads/2013/12/artikel2-0213.pdf>

## KNOWLEDGE SHARING IN A GERMAN MUNICIPALITY

- Kommunale Gemeinschaftsstelle für Verwaltungsmanagement (2001). KGST-Bericht. *Wissensmanagement in Kommunalverwaltungen*. (Bericht 7/2001).
- Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: a literature review. *Quality & Quantity*, 47, 2025-2047. doi: 10.1007/s11135-011-9640-9
- Lai, H. M., & Chen, T. T. (2014). Knowledge sharing in interest online communities: A comparison of posters and lurkers. *Computers in Human Behavior*, 35, 295-306. doi: 10.1016/j.chb.2014.02.004
- Larsen, S., & Folgerø, I. S. (1993). Supportive and defensive communication. *International Journal of Contemporary Hospitality Management*, 5, 22-26. doi: 10.1108/09596119310040534
- Lehner, F. (2012). *Wissenmanagement, Grundlagen, Methoden und Technische Unterstützung*. Munich, Germany: Carl Hanser Verlag.
- Lin, H. F. (2007). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of Information Science*, 33, 135-149. doi: 10.1177/0165551506068174
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, 4, 84-99. doi: 10.1037/1082-989X.4.1.84
- Maier, G. W. & Woschée, R. (2014): Deutsche Fassung des Organizational Commitment Questionnaire (OCQ-G). In D. Danner & A. Glöckner-Rist (Eds.), *Zusammenstellung sozialwissenschaftlicher Items und Skalen*. doi: 10.6102/zis10
- Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire. *Advances in Developing Human Resources*, 132, 132-151. doi: 10.1177/1523422303005002002
- Matschke, C., Moskaliuk, J., Bokhorst, F., Schümmer, T., & Cress, U. (2014). Motivational factors of information exchange in social information spaces. *Computers in Human Behavior*, 36, 549-558. doi: 10.1016/j.chb.2014.04.044
- Matzler, K., & Mueller, J. (2011). Antecedents of knowledge sharing – Examining the influence of learning and performance orientation. *Journal of Economic Psychology*, 32, 317-329. doi: 10.1016/j.joep.2010.12.006
- Moustaghfir, K., & Schiuma, G. (2013). Knowledge, learning, and innovation: research and perspectives. *Journal of Knowledge Management*, 17, 495-510. doi: 10.1108/JKM-04-2013-0141

## KNOWLEDGE SHARING IN A GERMAN MUNICIPALITY

- Park, C., Vertinsky, I., & Lee, C. (2012). Korean international joint ventures: how the exchange climate affects tacit knowledge transfer from foreign parents. *International Marketing Review*, 29, 151-174. doi: 10.1108/02651331211216961
- Phaobunjong, K., & Popescu, C. M. (2003). Parametric cost estimating model for buildings. *AACE International Transactions*, 1, 131-142. Retrieved from <http://search.proquest.com/openview/efbc3b65c08c2446aa4434936bff71b7/1?pq-origsite=gscholar>
- Postmes, T., Tanis, M., & de Wit, B. (2001). Communication and commitment in organizations: A social identity approach. *Group Processes & Intergroup Relations*, 4, 227-246. doi: 10.1177/1368430201004003004
- Radhakrishna, R. B. (2007). Tips for developing and testing questionnaires/instruments. *Journal of Extension*, 45, 1-4. Retrieved from <http://www.joe.org/joe/2007february/tt2p.shtml>
- Rebelo, T. M., & Duarte Gomes, A. (2011). Conditioning factors of an organizational learning culture. *Journal of Workplace Learning*, 23, 173-194. doi: 10.1108/09534811211199600
- Reeve, J. (2008). *Understanding motivation and emotion*. Hoboken, New Jersey: John Wiley & Sons.
- Roumois, U. H. (2013). *Studienbuch Wissensmanagement - Grundlagen der Wissensarbeit in Wirtschafts-, Non-Profit- und Public-Organisationen*. Retrieved from [http://studienbuchwissensmanagement.ch/wissensmanagement/StbWM\\_Hasler\\_Kap1\\_Wissensgesellschaft.pdf](http://studienbuchwissensmanagement.ch/wissensmanagement/StbWM_Hasler_Kap1_Wissensgesellschaft.pdf)
- Schmitz, S., Rebelo, T., Gracia, F. J., & Tomás, I. (2014). Learning culture and knowledge management processes: To what extent are they effectively related? *Revista de Psicología del Trabajo y de las Organizaciones*, 30, 113-121. doi: 10.1016/j.rpto.2014.11.003
- Schnell, K.D., Held, T., & Scherer, R. (2005). *Wissensmanagement Regionalentwicklung Schweiz. Machbarkeitsstudie für eine Supportstrategie innerhalb der neuen Regionalpolitik des Bundes*. Retrieved from University of St. Gallen, Institute for Public Services and Tourism website: <https://www.alexandria.unisg.ch/publications/20714>
- Spector, P. E. (2012). *Industrial and organizational psychology – Research and practice*. NJ, Hoboken: John Wiley & Sons, Inc..
- Sperber, A. D. (2004). Translation and validation of study instruments for cross-cultural research. *Gastroenterology*, 126, 124-128. doi: 10.1053/j.gastro.2003.10.016

## KNOWLEDGE SHARING IN A GERMAN MUNICIPALITY

- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of management Journal*, 38, 1442-1465. Retrieved from [http://www.jstor.org.proxy.uhn.ru.nl/stable/256865?origin=crossref&seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org.proxy.uhn.ru.nl/stable/256865?origin=crossref&seq=1#page_scan_tab_contents)
- Stenmark, D. (2000). Leveraging tacit organizational knowledge. *Journal of Management Information Systems*, 17 (3), 9-24. doi: 10.1080/07421222.2000.11045655
- te Wilde, E. (2014). Work motivation of employees in the public sector – The case of a German municipality. Unpublished master's thesis. Available from: [https://blackboard.ru.nl/bbcswebdav/institution/SOW/SOW-PS/Scripties/Master%20AOG/2013-2014/Wilde%2C%20Elena\\_te\\_-s4404203-2014- JB.pdf](https://blackboard.ru.nl/bbcswebdav/institution/SOW/SOW-PS/Scripties/Master%20AOG/2013-2014/Wilde%2C%20Elena_te_-s4404203-2014- JB.pdf)
- van den Hooff, B., & de Leeuw van Weenen, F. (2004). Committed to share: commitment and CMC use as antecedents of knowledge sharing. *Knowledge and Process Management*, 11, 13-24. doi: 10.1002/kpm.187
- van den Hooff, B., & de Ridder, J. A. (2004). Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*, 8, 117-130. doi: 10.1108/13673270410567675
- van Vuuren, M., de Jong, M. D., & Seydel, E. R. (2007). Direct and indirect effects of supervisor communication on organizational commitment. *Corporate Communications: An International Journal*, 12, 116-128. doi: 10.1108/13563280710744801
- Wiggins, B. C. (2000, November). *Detecting and dealing with outliers in univariate and multivariate contexts*. Paper presented at the meeting of Mid-South Educational Research Association, Bowling Green, KY.
- Wilson, T. D. (2002). The nonsense of 'knowledge management'. *Information Research*, 8. Retrieved from [www.iwp.jku.at/born/mpwfst/06/nonsenseofwm/p144.html](http://www.iwp.jku.at/born/mpwfst/06/nonsenseofwm/p144.html)
- Wong, K., & Aspinwall, E. (2005). An empirical study of the important factors for knowledge-management adoption in the SME sector. *Journal of Knowledge Management*, 9, 64-82. doi: 10.1108/13673270510602773
- Yang, B. (2003). Identifying valid and reliable measures for dimensions of a learning culture. *Advances in Developing Human Resources*, 5, 152-162. doi: 10.1177/1523422303005002003

## KNOWLEDGE SHARING IN A GERMAN MUNICIPALITY

- Yu, T. K., Lu, L. C., & Liu, T. F. (2010). Exploring factors that influence knowledge sharing behavior via weblogs. *Computers in Human Behavior*, 26(1), 32-41. doi: 10.1016/j.chb.2009.08.002
- Zhang, X., & Jiang, J. Y. (2015). With whom shall I share my knowledge? A recipient perspective of knowledge sharing. *Journal of Knowledge Management*, 19 (2), 1-31. doi: 10.1108/JKM-05-2014-0184

**Appendix A: Short Version of the Dimensions of the Learning Organization  
Questionnaire**

**Individuelles Niveau**

1. In meinem Unternehmen helfen sich die Beschäftigten gegenseitig zu lernen.
2. In meinem Unternehmen bekommen die Beschäftigten Zeit, um das Lernen zu fördern.
3. In meinem Unternehmen werden die Beschäftigten für das Lernen belohnt.
4. In meinem Unternehmen geben die Beschäftigten sich gegenseitig offenes und ehrliches Feedback.
5. In meinem Unternehmen fragen die Beschäftigten jedes Mal wenn sie ihre Sichtweise darlegen auch, was andere denken.
6. In meinem Unternehmen verbringen die Beschäftigten Zeit damit Vertrauen zueinander aufzubauen.

**Team- oder Gruppenniveau**

7. In meinem Unternehmen haben Teams/Gruppen die Freiheit ihre Ziele anzupassen, falls das notwendig ist.
8. In meinem Unternehmen korrigieren Teams/Gruppen ihre Denkweise als Ergebnis von Gruppendiskussionen oder auf Grund von gesammelten Informationen.
9. In meinem Unternehmen sind Teams/Gruppen überzeugt davon, dass das Unternehmen ihren Empfehlungen folgen wird.

**Unternehmensniveau**

10. Mein Unternehmen schafft Systeme, um Lücken zwischen jetziger und erwarteter Leistung zu messen.
11. Mein Unternehmen macht seine gelernten Lektionen (,lessons learnt‘) für alle Beschäftigten zugänglich.
12. Mein Unternehmen misst die Resultate der Zeit und der Ressourcen, die für Training ausgegeben wurden.
13. Mein Unternehmen erkennt Beschäftigte an, wenn sie die Initiative ergreifen.
14. Mein Unternehmen gibt den Beschäftigten die Möglichkeit Ressourcen zu kontrollieren, die sie brauchen, um ihre Arbeit zu erfüllen.
15. Mein Unternehmen unterstützt Beschäftigte, die kalkulierte Risiken eingehen.

16. Mein Unternehmen ermutigt die Beschäftigten in einer globalen Perspektive zu denken.
17. Mein Unternehmen arbeitet mit der externen Gemeinschaft zusammen, um die gemeinsamen Bedürfnisse zu erfüllen.
18. Mein Unternehmen ermutigt die Beschäftigten Antworten im gesamten Unternehmen zu suchen, wenn sie ein Problem lösen.
19. In meinem Unternehmen sind die Führungskräfte Mentor und Coach für diejenigen, die sie führen.
20. In meinem Unternehmen suchen die Führungskräfte ständig nach Gelegenheiten, um zu lernen.
21. In meinem Unternehmen stellen die Führungskräfte sicher, dass die Tätigkeiten des Unternehmens mit den Werten des Unternehmens übereinstimmen.

### **Appendix B: Organizational Commitment Questionnaire**

1. Ich bin bereit, mich mehr als nötig zu engagieren, um zum Erfolg des Unternehmens beizutragen.
2. Freunden gegenüber lobe ich dieses Unternehmen als besonders guten Arbeitgeber.
3. Ich fühle mich diesem Unternehmen nur wenig verbunden.\*
4. Ich würde fast jede Veränderung meiner Tätigkeit akzeptieren, nur um auch weiterhin für dieses Unternehmen arbeiten zu können.
5. Ich bin der Meinung, dass meine Wertvorstellungen und die des Unternehmens sehr ähnlich sind.
6. Ich bin stolz, wenn ich anderen sagen kann, dass ich zu diesem Unternehmen gehöre.
7. Eigentlich könnte ich genauso gut für ein anderes Unternehmen arbeiten, solange die Tätigkeit vergleichbar wäre.\*
8. Dieses Unternehmen spornt mich zu Höchstleistungen in meiner Tätigkeit an.
9. Schon kleine Veränderungen in meiner gegenwärtigen Situation würden mich zum Verlassen des Unternehmens bewegen.\*
10. Ich bin ausgesprochen froh, dass ich bei meinem Eintritt dieses Unternehmen anderen vorgezogen habe.
11. Ich verspreche mir nicht allzu viel davon, mich langfristig an dieses Unternehmen zu binden.\*
12. Ich habe oft Schwierigkeiten, mit der Unternehmenspolitik in Bezug auf wichtige

Arbeitnehmerfragen übereinzustimmen.\*

13. Die Zukunft dieses Unternehmens liegt mir sehr am Herzen.

14. Ich halte dieses für das beste aller Unternehmen, die für mich in Frage kommen.

15. Meine Entscheidung, für dieses Unternehmen zu arbeiten, war sicher ein Fehler.\*

### **Appendix C: Questions to Measure Intrinsic Motivation to Share Knowledge**

#### **Wissen - Selbstwirksamkeit**

1. Ich bin von meiner Fähigkeit über Wissen zu verfügen, das andere in meinem Unternehmen wertvoll finden, überzeugt.
2. Ich habe die nötige Erfahrung, um über wertvolles Wissen für mein Unternehmen zu verfügen.
3. Es macht eigentlich keinen Unterschied, ob ich mein Wissen mit meinen Kollegen teile.\*
4. Die meisten anderen Mitarbeiter können wertvolleres Wissen bieten als ich.\*

#### **Freude anderen zu helfen**

1. Mir gefällt es, mein Wissen mit meinen Kollegen zu teilen.
2. Mir gefällt es, meinen Kollegen dadurch zu helfen, dass ich mein Wissen mit ihnen teile.
3. Es fühlt sich gut an, jemandem durch das Teilen meines Wissens zu helfen.
4. Mein Wissen mit meinen Kollegen zu teilen ist vergnüglich.

### **Appendix D: Questions to Measure the Communication Climate**

1. Wenn es nötig ist, können die Kollegen in diesem Unternehmen sich gegenseitig um Hilfe fragen.
2. Ich kann einfach bei meiner direkten Führungskraft ins Büro laufen, um etwas zu fragen.
3. Ich habe regelmäßig formellen Kontakt mit meinen Kollegen als Teil meiner Arbeit.
4. Ich habe regelmäßig informellen Kontakt mit meinen Kollegen.



**Appendix E: Knowledge Management Scan**

1. Wenn ich etwas Neues gelernt habe, Sorge ich dafür, dass die Kollegen in meiner Abteilung es auch lernen können.
2. Ich teile die Informationen, die ich habe, mit den Kollegen in meiner Abteilung.
3. Ich teile meine Fähigkeiten mit den Kollegen in meiner Abteilung.
4. Wenn ich etwas Neues gelernt habe, Sorge ich dafür, dass die Kollegen außerhalb meiner Abteilung es auch lernen können.
5. Ich teile die Informationen, die ich habe, mit den Kollegen außerhalb meiner Abteilung.
6. Ich teile meine Fähigkeiten mit den Kollegen außerhalb meiner Abteilung.

**Appendix F: List of Deleted Items**

| Questionnaire                           | Deleted Items |
|---|---------------|
| DLOQ                                    | /             |
| OCQ                                     | 1, 4          |
| Intrinsic Motivation to Share Knowledge | 8             |
| Communication Climate                   | 2             |
| Knowledge Management Scan               | 8             |

**Appendix G: Regression of Supportive Communication Climate Ignoring Affective Commitment**

| Analysis | <i>b</i> | <i>t</i>  | <i>p</i> |
|----------|----------|-----------|----------|
| 1        | 0.4875   | (70) 4.41 | .0000    |
| 2        | 0.4245   | (70) 4.08 | .0001    |
| 3        | 0.4124   | (70) 3.85 | .0003    |
| 4        | 0.4135   | (70) 3.86 | .0002    |
| 5        | 0.4349   | (70) 4.04 | .0001    |
| 6        | 0.4806   | (70) 4.70 | .0000    |
| 7        | 0.4163   | (70) 4.02 | .0001    |
| 8        | 0.4301   | (70) 4.00 | .0002    |
| 9        | 0.3570   | (70) 3.42 | .0011    |
| 10       | 0.4618   | (70) 4.48 | .0000    |

**Appendix H: Regression of Supportive Communication Climate on Affective Commitment**

| Analysis | <i>b</i> | <i>t</i>  | <i>p</i> |
|----------|----------|-----------|----------|
| 1        | 0.2385   | (70) 2.30 | .0243    |
| 2        | 0.2379   | (70) 2.13 | .0363    |
| 3        | 0.3299   | (70) 2.85 | .0058    |
| 4        | 0.1835   | (70) 1.58 | .1187    |
| 5        | 0.2054   | (70) 1.79 | .0776    |
| 6        | 0.2238   | (70) 2.15 | .0347    |
| 7        | 0.2299   | (70) 2.07 | .0432    |
| 8        | 0.2448   | (70) 2.29 | .0250    |
| 9        | 0.2541   | (70) 2.29 | .0252    |
| 10       | 0.3121   | (70) 2.81 | .0065    |

**Appendix I: Regression of Affective Commitment Controlling for Supportive Communication Climate**

| Analysis | <i>b</i> | <i>t</i>  | <i>p</i> |
|----------|----------|-----------|----------|
| 1        | 0.4524   | (69) 3.89 | .0000    |
| 2        | 0.3829   | (69) 3.13 | .0026    |
| 3        | 0.4323   | (69) 4.39 | .0000    |
| 4        | 0.3987   | (69) 3.99 | .0002    |
| 5        | 0.3881   | (69) 3.77 | .0003    |
| 6        | 0.4195   | (69) 3.91 | .0002    |
| 7        | 0.4473   | (69) 4.54 | .0000    |
| 8        | 0.4131   | (69) 3.74 | .0004    |
| 9        | 0.3780   | (69) 3.64 | .0005    |
| 10       | 0.2693   | (69) 2.52 | .0140    |

**Appendix J: Regression of Supportive Communication Climate Controlling for Affective Commitment**

| Analysis | <i>b</i> | <i>t</i>    | <i>p</i> |
|----------|----------|-------------|----------|
| 1        | 0.3796   | (69) 3.63   | .0000    |
| 2        | 0.3462   | (69) 3.42   | .0093    |
| 3        | 0.2698   | (69) 2.67   | .0010    |
| 4        | 0.3404   | (69) 3.44   | .0010    |
| 5        | 0.3552   | (69) 3.52   | .0008    |
| 6        | 0.3867   | (69) 4.02   | .0001    |
| 7        | 0.3134   | (69) 3.32   | .0014    |
| 8        | 0.3290   | (69) 3.21   | .0020    |
| 9        | 0.2609   | (69) 2.61   | .0111    |
| 10       | 0.3778   | (69) 3.6042 | .0006    |

**Appendix K: Bootstrap Confidence Intervals**

| Analysis | BootLLCI | BootULCI |
|----------|----------|----------|
| 1        | 0.0025   | 0.3020   |
| 2        | - 0.0060 | 0.2385   |
| 3        | 0.0184   | 0.3519   |
| 4        | - 0.0154 | 0.2448   |
| 5        | - 0.0128 | 0.2512   |
| 6        | - 0.0015 | 0.2706   |
| 7        | - 0.0067 | 0.2947   |
| 8        | 0.0050   | 0.3024   |
| 9        | 0.0043   | 0.2738   |
| 10       | 0.0063   | 0.2561   |