

Relationship Between Self-Efficacy, Trust, and Knowledge Sharing Among IT Industry Employees Working Remotely

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Abstract: The COVID-19 pandemic has had an impact on socio-economic changes, including changes in the working environment. Remote working started to become widely applied. Consequently, there has been a growth in the level of interest in the organization of this form of work and the search for effective solutions that support labour efficiency in these particular conditions. One of the aspects that is gaining in significance in terms of working conditions that reduce direct face to face communication between employees is that of knowledge sharing. The aim of the paper was to analyse the dependencies between the chosen individual psychological variables and knowledge sharing in conditions of remote working. Emphasis was placed on the analysis of the relation between such variables as: self-efficacy and the level of interpersonal trust, while also knowledge sharing behaviour among the employees of the IT sector working remotely. A cross-sectional study model was applied. The study included 112 employees from the IT industry who worked remotely at the time of conducting the research. The following tools were used in the analysis: *Generalized Self-Efficacy Scale* (GSES) by Schwarzer, Jerusalem, Juczyński, a questionnaire entitled *Faith in a Person* by Hybiak, while also a self-designed survey. In the analysis, a strong positive correlation between self-efficacy and knowledge sharing and a moderate positive correlation between trust and knowledge sharing was noted among the employees of the IT sector. The research findings significantly broaden knowledge in the sphere of the individual factors influencing the effective organization of the process of knowledge management, while particularly knowledge sharing in conditions of remote working. It is possible to state that the employees of the IT sector, who are characterized by a high level of self-efficacy, while also more prone to trust others, display a greater willingness to share knowledge with other employees. Familiarity with the relations between knowledge sharing and the psychological variables may be useful, particularly for IT managers.

Keywords: knowledge sharing behaviour, self-efficacy, trust

1. Introduction

The direct consequences of the COVID-19 pandemic forced changes in the social and economic spheres, including the area of professional functioning. The resulting real threat to health and life itself required adapting working conditions to the changed reality to ensure appropriate safety levels for employees. Remote working has become a recommended and widespread form of earning a living. When compared to the pre-pandemic period, its use has increased, with fewer than 1 in 20 employees reporting working from home regularly in 2018 and less than 1 in 10 working this way occasionally (Sostero et al., 2020). By contrast, in the 'Living, working and COVID-19' survey conducted by Eurofound in April 2020, over one-third (39%) of European Union Member States employees indicated that they were working from home because of the pandemic (Eurofound, 2020). By July 2020, this figure had risen to 48% (34% working exclusively from home and 14% working hybrid). The spread of remote working has also raised issues regarding this form of earning a living. Topics such as working time flexibility, coordination of remote work, or adequate work efficiency evaluation have become more prominent. A problem related to the limitation of direct communication between remote workers is also the problem of effective knowledge sharing (KS). KS is one of the critical elements of knowledge management and thus a central topic in management research (Serenko, Bontis, 2004). KS is the transfer of knowledge among individuals in organizations to help others and collaborate with others to solve problems, develop new ideas, or implement policies or procedures (Wang, Noe, 2010). It is a confirmed fact that good organization of KS among employees leads to many benefits for an organization such as, among others: building innovation, developing new ideas, building competencies, responding to problems more quickly, understanding customer needs, while also reducing operational costs of the organization (Mohajan, 2019). Therefore, it is evident that the proper implementation of KS is of momentous importance for organizational performance. Considering the aforesaid significance, the paper attempts to answer whether psychological variables are related to KS readiness in terms of remote working settings. The focus was on analysing the relationship between KS and two selected variables: self-efficacy (SE) and trust in a group of IT employees. Learning about these relationships seems particularly important in the conditions of the COVID-19 pandemic, in which remote work has become the most recommended form of earning a living.

2. Literature review

2.1 Determinants of knowledge sharing

The literature highlights various determinants of KS. They can be described in three categories: technological factors, organizational factors, and individual factors (Paroutis, Al Saleh, 2009). The focus of this article is on the category of individual psychological factors, which includes several personal characteristics that can significantly affect the readiness for KS in the working environment, such as personality traits, resources and skills. Research confirms the relationship between KS and individual personality dimensions distinguished according to the *Big Five* model. Some studies indicate that KS readiness actually correlate positively, especially with the dimensions of Extraversion (Anwar, 2017; Chrapek, 2021; Lotfi et al., 2016; Maliszewska et al., 2010; Nishanthi, Munasinghe, 2020; Teh et al., 2011), Conscientiousness (Anwar, 2017; Chrapek, 2021; Gupta, 2008; Lotfi et al., 2016; Matzler et al., 2008; Nishanthi, Munasinghe, 2020) or Openness to experience (Cabrera et al., 2006; Chrapek, 2021; Lotfi et al., 2016; Maliszewska et al., 2010; Matzler et al., 2008; Nishanthi, Munasinghe, 2020). Another individual psychological trait that may influence KS readiness is related to altruism – the enjoyment of helping others (Yiu, Law, 2012). Research indicates that employees are intrinsically motivated by relative altruism to KS because engaging in intellectual pursuits and solving problems is challenging or pleasurable, and they enjoy helping others (Lin, 2007). Among other individual factors, it is also worth pointing out the sense of competition that individuals perceive, a variable that may negatively correlate with motivation for KS, but research in this area is not consistent (Connelly et al., 2014; Jeon, Lee, 2020; Yang, Maxwell, 2011).

2.2 Self-efficacy and trust versus knowledge sharing

SE is a characteristic identified in subject-related literature that strongly influences KS (Shehab et al., 2018; Olowodunoye, 2015; Yiu, Law, 2012). SE is defined as “the belief in one’s capabilities to organize and execute courses of actions required to manage prospective situations” (Hsu et al., 2007). Many authors identify SE as an essential element in sharing knowledge (Bock, Kim, 2002; Kaewchur, Phusavat, 2016; Othman, Skaik, 2014). Bock and Kim (2002) propose considering SE as a significant factor that is a source of motivation for KS. These researchers showed that employees’ individual evaluation of their personal contribution to organizational performance positively influences KS activity. Similarly, a study by Fathi et al. (2011) in a manufacturing company in Malaysia confirmed that SE affects intentions towards KS. Empirical evidence also indicates that SE may predict KS (Bilginoglu, Yozgat, 2018; Boonmee, 2011; Olowodunoye, 2015; Othman, Skaik, 2014). Notably, the relationship between SE and KS has also been demonstrated in virtual communities (Hsu et al., 2007; Huang et al., 2015).

Another essential factor that determines readiness for KS is that of trust. Trust is a variable referred to in literature as a critical facilitator of KS (Zhang, 2014). It is indicated that the attitude of trust significantly reduces the distance between co-workers (Davidavičiene et al., 2020; Hung, et al., 2015; Shehab et al., 2018). When collaborators trust their partners, the social ties are strong, and the contribution to KS is increased (Navimipour, Charband, 2016). Wang et al. (2012), by availing of data from the top firms in high-tech industries, confirmed that trust positively influences KS. Holste and Fields (2010), in a study involving 202 professionals and managers, showed a positive relationship between the so-called affect-based trust with a willingness to KS compared to cognition-based trust, which was more significant for the willingness to use tacit knowledge. Similar findings were obtained by Huang et al. (2011) in a study involving 204 employees from Chinese organizations, who showed that affect-based trust explained significant variations in KS. The importance of trust in the context of KS has also been tested in online settings (Ridings et al., 2002; Paroutis, Al Saleh, 2009). The study of Ridings et al. (2002) confirmed that trust in others’ ability, benevolence, and integrity correlates with the willingness to give and receive information from virtual community members.

3. Research background

The literature review presented confirms the association of KS with various psychological variables, among which SE and trust can be considered to be one of the most important. Both of these variables were taken into account in this study. SE is a construct that grew out of Bandura’s social-cognitive theory, which points to the importance of the interaction between individual, environmental and behavioural factors (Bandura 1997; Bandura 2006). Bandura emphasises that this concerns the self-efficacy mechanisms. The most central and dominant beliefs of people relate to their own efficacy in controlling their own functioning and the events they experience. Therefore, SE influences motivation regarding what people feel, think, behave, and what decisions they make. Since SE stands for a person’s belief in their ability to perform a specific task, therefore with regard

to KS, efficacy perceptions refer to a person's view regarding the value of knowledge (Cabrera, Cabrera, 2005). It may be assumed that if individuals believe that the knowledge they have will be valuable and helpful to others, they will be more likely to make an effort to share this knowledge with others. In turn, the trust factor seems particularly important with regard to KS, as it is treated as a particular exchange of resources. Referring to the Social Exchange Theory, individuals regulate interactions with others based on a balance of costs and benefits (Blau, 2006). An individual may engage in an interchange according to the expectation of reciprocity in the future, an expectation regulated by trust (Cabrera, Cabrera, 2005). This is important because, as Szczepański et al. (2014) point out, any act of social exchange must be accompanied by trust, and its absence can lead to the abandonment of the exchange process. This seems particularly relevant in a remote working situation where face to face communication is limited. Given the above arguments, the following hypotheses were adopted:

- H1. There is a positive relationship between SE and KS in a group of IT employees working remotely.*
H2. There is a positive relationship between interpersonal trust level and KS in a group of IT employees working remotely.

The lack of similar empirical works justifies learning about the presented relationships among IT employees working remotely. The author is aware of what would be conducted with the participation of such a group of respondents. Therefore, the results will constitute an essential supplement to the research gap in this respect.

4. Methodology

4.1 Participants

The survey was conducted among employees of an IT company based in central Poland. The selection criterion for the study was the condition of remote working as the dominant form of work at the time of the study. Out of the employees who met the selection criteria, 131 people agreed to participate in the study. The surveyed employees received survey sheets in a sealed envelope and handed the completed sheets to the person designated to cooperate in the study. The final study group consisted of 112 people (19 people did not return the completed questionnaires): 39 women and 73 men aged between 26 and 47 years ($M=35.08$; $SD=5.89$). At the time of the survey, workers held the following positions: computer applications specialist ($n=38$), service support specialist ($n=16$), programming specialist ($n=32$), designer and computer systems analyst ($n=26$). All respondents had predominantly worked remotely since the pandemic. Before the pandemic, the average remote working time of the respondents was 4.5 hrs/week. Detailed characteristics of the study group are presented in Table 1.

Table 1: Characteristics of the study group

		N	%
Employees	females	39	34.8
	males	73	65.2
Education	tertiary	78	69,6
	secondary	34	30,4
Workplace	IT application specialist	38	33,9
	service support specialist	16	14,3
	designer and computer systems analyst	26	23,2
	programming specialist	32	28,6
		M	SD
Age (years)		35.08	5.89
Average remote working time per week before the pandemic (h)		4.48	5.13

4.2 Measures

For the study of SE, the *Generalised Self-Efficacy Scale (GSES)* of Schwarzer and Jerusalem (in the Polish adaptation by Juczyński) was used, which refers to the concept of expectations and perceived self-efficacy formulated by Bandura (1997) (Juczyński, 2000). The scale includes 10 questions that measure a person's general belief in their effectiveness in dealing with difficult situations and obstacles (Juczyński, 2012). The sum of all scores indicates an overall SE index that ranges from 10 to 40 points. The tool's validity was assessed by showing statistically significant relationships between the GSES and internal locus of health control, optimistic attitude

and self-esteem (Juczynski, 2000). The scale's reliability assessed by the test-retest method (after five weeks) was 0.78.

In turn, the questionnaire *Faith in Humanity - What Are People Like?* developed by Hybiak was used to examine trust. The tool measures the level of belief in people, which is identified with the level of trust in other people (Skrzypińska, 2002). The questionnaire consists of 20 statements about people, to be evaluated by the respondent on a seven-point scale, indicating how much they agree with them. The scale's reliability index is 0.90 (Cronbach's α).

In addition, the study used a self-administered questionnaire while taking account of the following data: the respondent's age and gender, education, position held in the company, while also the number of hours of remote work before the pandemic. The questionnaire also included a question regarding knowledge sharing: *How often do you pass on your expertise to other employees (apart from situations of knowledge transfer that arise directly from instructions from superiors)?* Respondents answered the aforesaid question on a five-point scale: never, rarely, sometimes, often, very often.

4.3 Data analysis

The study was cross-sectional by nature. Spearman's rank correlation was used to assess the association between employees' KS frequency and psychological variables (SE, trust). The statistical program STATISTICA 13.3 from Statsoft was used for the calculations. A statistical significance level of $p < 0.05$ was adopted.

5. Results

The highest number of employees surveyed (38.4%) stated that they share their expertise with other employees very often, while the lowest number (2.7%) indicated that they never share their knowledge with other employees. Detailed descriptive data on KS and the means and standard deviations of SE and trust test scores are presented in Table 2.

Based on statistical analysis based on Spearman rank correlation, statistically significant relationships were obtained between the psychological variables studied: SE and trust and the frequency of KS. A strong positive correlation was found between SE and KS ($r = 0.794$), while a moderate positive relationship was obtained between trust and KS ($r = 0.598$). Thus, the testing result confirms the assumptions of hypothesis 1 and hypothesis 2. The detailed outcomes of the study are presented in Table 3 and Figures 1 and 2.

Table 2: Descriptive statistics of the frequency of knowledge sharing, SE and trust

	N	%
<i>How often do you pass on your expertise to other employees (apart from situations of knowledge transfer that arise directly from instructions from superiors)?</i>		
Never	3	2.7
Rarely	14	12.5
Sometimes	22	19.6
Often	30	26.8
Very often	43	38.4
	Mean	SD
SE	32.2	5.5
Trust	87.1	35.6

Table 3: Relationship between SE and trust and frequency of sharing knowledge among IT workers

Variable	R Spearman's	P
SE	0.794	0.000
Trust	0.598	0.000

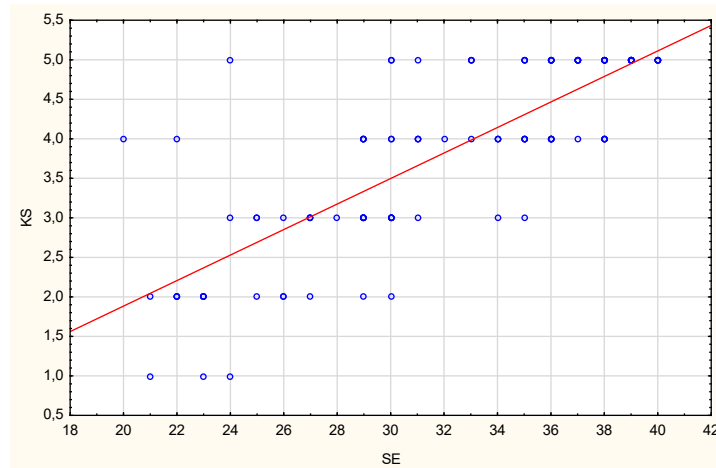


Figure 1: Scatter plot showing the relationship between frequency of sharing knowledge and SE among IT workers

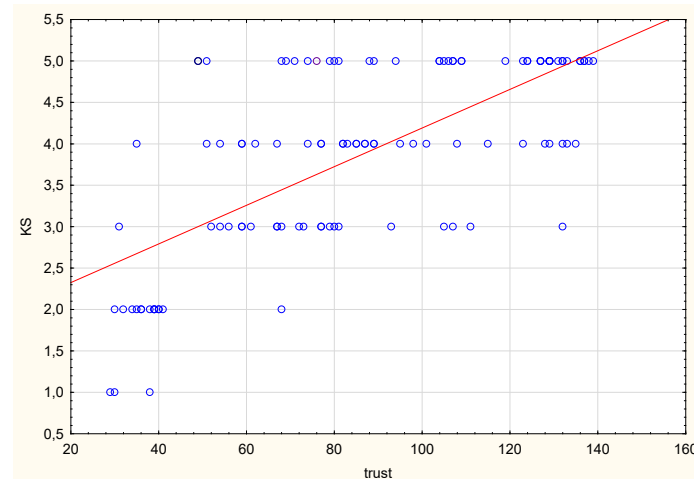


Figure 2: Scatter plot showing the relationship between frequency of sharing knowledge and trust

6. Discussion

As a result of the study, hypotheses 1 and 2 were confirmed. A statistically significant positive relationship was obtained between the SE and KS in the group of IT employees working remotely (H1), as well as a statistically significant positive correlation between the level of the interpersonal trust and KS in the group of IT employees working remotely. This means that those IT workers who have high SE and who are more willing to trust others, will also be more willing to display KS behavioural patterns. The results of the study are confirmed by other studies on the relationship between the SE and KS (Bilginoglu, Yozgat, 2018, Boonmee, 2011; Hsu et al., 2007; Huang et al., 2015; Law, 2012; Olowodunoye, 2015; Othman, Skaik, 2014; Shehab, Rahim, Daud, 2018), as well as between trust and KS (Holste, Fields, 2010; Huang et al., 2011; Paroutis, Al Saleh, 2009; Ridings et al. 2002; Wang et al., 2012). However, the study, conducted precisely on a group of Polish IT employees, fills an important research gap in this area. This is important especially in the context of the universal nature of remote work and the constant need to improve this form of work organization.

The relationship between SE and KS in the surveyed employees may be justified with reference to Bandura's socio-cognitive theory by referring to the motivational value of the SE with regard to the undertaken activities (Bandura 1997; Bandura 2006). It may be concluded that IT industry employees who are convinced of their competences in the scope of the tasks performed, will be more willing to share useful and accurate knowledge with their colleagues. It is significant to add that SE promotes the assessment of tasks as valuable, while work as important, useful and interesting (Bong, 2001). Such attitudes can encourage the IT employees to get involved and increase the effectiveness of their activities; which the KS behaviour undoubtedly serves. Not without significance is the overall mean SE level (32.2) obtained in this group of respondents, which when converted into sten values indicates high indicators of this variable. This result may be related to the specificity of professional

experiences of the studied group of employees, in which the task-oriented approach is strongly promoted, but this hypothesis requires careful testing of cause-and-effect relationships. Moreover, as emphasized by the SE studies, it may be an important predictor of achievement and persistence (Concannon, Barrow, 2010; Hsieh et al., 2012). On the other hand, successes and professional achievements may strengthen the self-efficacy conviction among the surveyed employees. This relationship is confirmed by Zeldin et al. (2008) demonstrating that the ongoing achievements and successes enhanced men's self-efficacy in mathematics, science, and technology. Therefore, it may be a kind of feedback mechanism, where the effective implementation of the professional tasks requiring industry-specific knowledge and specialist competences constantly strengthens the SE of the respondents, and the growing level of this variable encourages effective professional functioning. The KS will be useful in every phase of this coupling.

On the other hand, by justifying the obtained positive relationship between the trust and the KS, one can refer to the significance of the perceived benefits of trust in remote work. The situation of remote work, where face-to-face communication is limited, may make it difficult to build trust, yet on the other hand, remote interactions between the employees may require trust for successful communication and thus effective work (Ridings et al., 2002). This perspective may stimulate an attitude of trust among IT employees. This is probably facilitated by the employees' awareness of the value of their specialized knowledge of industry, which in turn encourages them to share this knowledge in anticipation of reciprocity. This is probably the consequence of the unwritten rule of mutual professional dependence on the knowledge possessed and sharing it, which translates into work efficiency as follows: "The more knowledge I gain, the more successful my professional achievements are." It is also worth noting that the results show that a high proportion of the IT industry employees surveyed (38.4%) declared that they often voluntarily share their knowledge with other employees. This is confirmed by the fact that the KS is a particularly important competence of IT employees, which is also indicated by some empirical studies (Adamczyk, 2014). As is well-known, the IT industry is particularly sensitive to rapidly advancing technological development and specialists such as programmers must constantly update their knowledge, for example, through KS in order to perform tasks effectively. What is more, in the process of mutual knowledge exchange between employees, trust can play an important role by reducing the fear of losing one's unique value in KS (Renzl, 2008). In addition, the same professional rules applicable to the IT employees can stimulate trust between them, which transfers into readiness for KS. As Bakker et al. (2006) show, people tend to share more knowledge with team members if they think they are honest and follow the same principles they have.

7. Limitations

One of the limitations of this study is the use of self-reported measurement tools, which are associated with the risk of measurement error resulting from consciously or subconsciously presenting themselves in a different light than in reality. In addition, the survey was conducted on a group of employees of one company. This creates some limitations in terms of generalizing the results. However, these limitations do not call into question the significance of the results, which may provide an important springboard for further scientific inquiry using different methodological criteria.

8. Conclusions

The results obtained confirmed the existence of relationships between SE and KS, and trust and KS. These results broaden the knowledge of the researched dependencies in a group of IT employees and are of significant importance for the organization of work, especially in the context of remote work. Thus, they imply important practical recommendations for IT managers such as the following:

1. It is important that they are aware of the importance of the psychological factors during the course of the KS process.
2. The assessment of the psychological variables such as: SE and trust should be conducted as early as at the recruitment stage (it is still a rare practice in the recruitment process), especially among specialized employees working remotely.
3. Although the conclusions suggest a potentially high level of SE among the employees in the IT industry, it is worth paying special attention to the stimulation of this resource among employees due to the number of benefits for professional functioning, including a strong positive impact on KS.

In the future, it would also be advisable to analyse other psychological variables that could determine the engagement in KS, while taking the various groups of employees from the IT sector into account.

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