Relationship Between Occupational Stress Level and Readiness Towards Knowledge Sharing Among IT Sector Employees

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Abstract: In the era of a knowledge-based economy, effective knowledge management, including knowledge sharing, is one of the determinants of organizational performance. Therefore, the task of companies should be to optimize the process of knowledge sharing, which is achieved by, among other things, a thorough understanding and use of the factors that affect this process. **Aim**. The purpose of the article was to study the relationship between the level of occupational stress and readiness towards knowledge sharing among IT Sector Employees. **Method.** A cross-sectional study model was applied. The study included 98 employees from the IT industry. The study used the Perceived Stress at Work Scale (PSaW) by Chirkowska-Smolak and Grobelny and a self-designed survey including: demographic data, work-related variables and questions about knowledge sharing with co-workers. **Results**. In the surveyed group of IT workers, greater readiness to share knowledge was found among employees who showed lower scores on the PSaW scale. In addition, significant relationships were found between the study variables according to the selected variables, including that among women with low rates of perceived stress at work, older women showed greater willingness to share knowledge compared to younger women. Furthermore, in terms of work-related variables, the results showed that among men declaring high rates of stress, those with shorter seniority were more willing to share knowledge compared to men with longer seniority. **Conclusions:** The research findings significantly broaden knowledge in the sphere of the factors influencing the effective organization of the knowledge management process, particularly knowledge sharing under stressful work conditions. This knowledge can be useful especially for IT managers.

Keywords: Knowledge Sharing, Stress Level, Employees

1. Introduction

Contemporary socio-economic conditions (e.g. rising inflation, turbulent global political situation) make it difficult for businesses to function and force them into strong competition to maintain their position. It is in an organization's interest to take care of every aspect of its functioning in order to keep up with market demands and ensure its competitiveness. One important aspect of an organization's functioning, especially in the era of a knowledge-based economy, is effective knowledge sharing (KS). KS involves the exchange of knowledge between at least two parties in a reciprocal process that allows the knowledge to be reshaped and made meaningful in a new context (Willem, 2003). Importantly, proper implementation of KS can be particularly important for organizational performance (Muhammed, Zaim, 2020). Organizations should therefore ensure that this process is carried out taking into account both the impact of various KS determinants, as well as solutions to improve the process (e.g. in the IT sector knowledge transfer is strengthened by extending the individual beyond the formal communication channels, such as: computer networks, electronic bulletin boards, etc. (Zheng, 2017)). The quality of KS implementation in an organization can be affected by technological, organizational, as well as individual factors (Paroutis, Al Saleh, 2009). One of the factors determining KS may be the level of stress experienced by individuals at work. This article attempts to verify the significance of selected KS determinants by answering the following question: is there a relationship between the level of perceived stress at work and readiness to share knowledge? When testing the aforementioned relationship, selected demographic and work-related factors were also taken into account.

2. Literature Review and Research Background

The unstable economic situation due to recent events, such as the pandemic, war, rising inflation, and the cost of living, has significantly affected the labor market and working conditions. Workplace stress has become a common experience. The results of a survey conducted in 2022 by GoodHabitz together with the research agency Markteffect on a sample of 24,235 employees in various positions, industries, and countries around the world indicate that one in five employees (18%) experienced significant signs of stress or burnout in the previous year (GoodHabitz, 2022). For Polish employees, this rate was 23%. Work-related stress generates a serious financial burden for societies around the world. The results of a narrative review indicate estimates that range from €54 million to €280 billion depending on the country (Shaholli, Mantione, La Torre, 2023). The results also suggest that lost productivity due to absenteeism and presenteeism has a greater economic impact compared to the medical expenses.

In practice, it is observed that there is still a prevalence in certain organizations of the tendency to accumulate knowledge rather than to share it (Ismail, Yusof, 2009). This is because knowledge can be perceived by an employee as private property – a valuable resource – which results in a greater tendency to hoard it rather than share it (Zhang, Song, Song, 2020). At the same time, this propensity may become more pronounced especially in stressful situations. To the author's knowledge, few empirical works verify a direct relationship between stress experienced and readiness towards KS, so there is still a lack of research in this area. This relationship was confirmed in a study by Marques et al. (2019) which revealed a positive relationship between organizational stress and disengagement from knowledge sharing and between stress and maturity in knowledge management. In contrast, research by Ford et al. (2015) indicated that poor health and worries are associated with more disengagement from knowledge sharing. Fang (2017), on the other hand, highlights the role of negative affect, such as anxiety, in knowledge hiding.

In an attempt to clarify the basis of the relationship between stress experienced at work and readiness towards KS, it is worth noting some characteristics of stress. Stress, which is an integral part of a person's life, including a professionally active person, can be defined using the words of Lazarus and Folkman (1984) as: "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being". Stress is therefore the result of the interaction between the individual's capabilities and the demands of the environment. In turn, according to Hobfoll's (2006) theory, stress is recognized when: 1) there is a threat of resource loss, 2) there is an actual resource loss, or 3) there are no gains following resource investment. Stress is therefore an internal state of the individual determined by the perception of the aforementioned circumstances. The stress response involves three levels: physiological (including: accelerated heart rate, increased blood pressure, bronchodilation, pupil dilation), psychological (including: narrowing of the attention field, reduced concentration, impaired ability to adequately assess the situation, impaired memory, anxiety attacks), and behavioral (including: appetite disorders, sleep disturbances, nervous tics) (Kashubska, 2023). In the area of stress-induced psychological changes, the consequences for the functioning of cognitive processes, including attention, may be particularly relevant to the issue at hand. Research suggests that in a situation of heightened tension, an individual may experience a restriction or narrowing of the field of attention – so-called *attentional tunneling*. This phenomenon can be defined as "the allocation of attention to a particular channel of information, diagnostic hypothesis, or task goal, for a duration that is longer than optimal, given the expected cost of neglecting events on other channels, failing to consider other hypotheses, or failing to perform other tasks" (Wickens, Alexander, 2009). In a stressful situation, the perceptual field may be narrowed, and the scope or span of behavior tends to be restricted to those elements which contribute most to the direction of behavior, or to those elements which appear to be the most dangerous (Staal, 2004). Thus, under stressful conditions, employees may be particularly preoccupied with aspects that constitute the content of stressful experiences, while they may be less focused on other activities, especially extracurricular work activities. Based on this, it can be suspected that readiness towards KS under conditions of experienced occupational stress may be lower than under conditions of perceived psychological comfort in the workplace. In order to verify this relationship, the following research question has been formulated:

Is there a relationship between the level of perceived occupational stress and readiness towards knowledge sharing among IT sector employees?

Exploring the indicated relationships and their determinants among Polish IT sector employees is also justified by the lack of similar empirical work, at least to the knowledge of the author, conducted with the participation of such a group of respondents. . Thus, the findings would constitute an important supplementation of research gaps in this sphere.

3. Methodology

3.1 Participants

The research was conducted among the employees of an IT sector company based in central Poland. The conditions for participation in the study were employment in the company for at least six months, knowledge of written Polish and voluntary consent to participate in the study. The research was conducted using online technology, anonymously. Respondents who agreed to participate completed questionnaires that were made available to them remotely. Among the employees invited to the study, consent to take part in the research was expressed by 103 people. Ultimately, the research group consisted of 98 people (5 people did not complete all questionnaires): 36 women and 62 men declaring Polish citizenship. The sample was heterogeneous in terms of

age, workplace education and job seniority (aged between 28 and 56: M=40.9; SD=8.7, the seniority of the employees surveyed ranged from 0.5 to 11 years: M=5.3; SD=2.8). Detailed characterization of the analyzed group is presented in Table 1.

Table 1: Characteristics of the study group

		N	%
Employees	women	36	36.7
	men	62	63.3
Education	higher	69	70.4
	secondary	29	29.6
Workplace	IT application specialist	34	34.7
	service support specialist	12	12.2
	designer and computer systems analyst	25	25.5
	programming specialist	27	27.6
		M	**SD**
Age (years)		40.9	8.7
Job seniority (years)		5.3	2.8

3.2 Measures

The study used a self-designed survey that takes into account the following data: sex and age of the person surveyed, education, as well as position held and job seniority in the firm analyzed. The survey also included the following question relating to knowledge sharing: *How often do you pass on your specialized knowledge to other employees (apart from situations when passing on the knowledge results directly from your superior's instructions)?* Respondents answered the aforesaid question on a five-point scale as follows: 1-never, 2-rarely, 3-sometimes, 4-often, 5-very often.

The *Perceived Stress at Work (PSaW) Scale* by Chirkowska-Smolak and Grobelny was used to measure perceived stress at work (Chirkowska-Smolak, Grobelny, 2016). The scale consists of 10 questions which the respondents use to evaluate their beliefs about unpredictability, lack of control and being overwhelmed by events at work in the month preceding the survey. Respondents answer the questions using a five-point scale (0 – never, 1 – almost never , 2 – sometimes, 3 – quite often, 4 – very often). The scale scores obtained in the survey range from 0–40, where a higher score indicates a higher rating of stress severity. The Cronbach's alpha reliability coefficient in the survey conducted with 537 people was 0.85.

3.3 Data Analysis

The study had a cross-sectional design. Due to the failure to fulfill the assumptions of the normality of distribution, as well as the unequal distribution of the numbers of the sub-groups compared, non-parametric tests were used for statistical analysis. Spearman's rank correlation was used to assess the relationship between the level of perceived stress at work and readiness towards KS, as well as to evaluate the association of selected factors with readiness towards KS in study groups with different levels of stress. The level of statistical significance was accepted as $p<0.05$. The calculations were performed using STATISTICA 13.3 statistical software by StatSoft.

4. Results

The study revealed an overall average level of stress in both the female and male study groups (respectively: M =26.72, SD = 10.5; M = 24.96, SD = 9.42). When considering the distribution according to the severity of perceived stress in both groups, the highest number of respondents showed high levels of perceived stress at work. The detailed test findings are presented in Table 2.

Tabel 2: Results of the perceived stress at work (PSaW) severity survey by gender

Level of Stress		n	M	SD
women	total	36	26.72	10.5
	low	6	7.67	3.39
	medium	14	20.50	3.44
	high	16	34.81	2.67
men	total	62	24.96	9.42
	low	10	10.00	2.00
	medium	14	20.36	3.15
	high	38	34.89	4.30

The results of testing the relationship between perceived stress at work and readiness towards KS revealed a negative statistically significant relationship between the variables ($p<0.05$). This means that the higher the level of perceived stress at work, the lower the readiness to share knowledge among the employees surveyed. The results of the study are presented in Table 3.

Table 3: Relationship between severity of perceived stress at work and readiness towards KS

Spearman's r	P
-0.732	0.000

Groups of respondents with different levels of perceived stress at work (low, medium and high) were distinguished in order to find out the significance of selected factors (age, seniority) for the variable readiness towards KS in relation to the level of perceived stress at work. Subsequently, the relationships of factors (age, seniority) and readiness towards KS were verified in the specified groups of respondents. As a result of testing the relationship between age and readiness towards KS in the study group (men and women) according to the level of perceived stress at work, a statistically significant correlation ($p<0.05$) was obtained only in the group of women reporting low levels of perceived stress at work. The results indicate that in the group of women with low stress levels, older age is associated with greater readiness towards KS. On the other hand, in terms of the seniority variable, a statistically significant negative correlation ($p<0.05$) was revealed only in the group of men reporting high levels of perceived stress at work. This relationship means that in this group, shorter seniority is associated with greater readiness towards KS. Details of the relationships tested are shown in Tables 4 and 5.

Table 4: Relationship between age and readiness towards KS in the study group (men and women) according to the level of perceived stress at work (PSaW)

	Level of stress	Spearman's r	p
women	low	0.198	0.043
	medium	0.346	0.224
	high	0.376	0.150
men	low	0.577	0.080
	medium	-0.249	0.389
	high	0.001	0.993

Table 5: Relationship between seniority and readiness towards knowledge sharing in the study group (men and women) according to the level of perceived stress at work (PSaW)

	Level of stress	Spearman's r	p
women	low	0.097	0.854
	medium	0.198	0.496
	high	-0.149	0.579
men	low	-0.073	0.839
	medium	-0.089	0.759
	high	-0.655	0.000

5. Discussion

Based on the survey, it can be concluded that there is a relationship between the level of perceived occupational stress and readiness towards KS among IT Sector Employees. Lower levels of perceived stress at work promote readiness towards KS among the employees surveyed, while higher levels of perceived stress are associated with lower readiness towards KS. This result is consistent with other studies cited in the literature review (Fang, 2017; Ford et al., 2015; Marques et al., 2019), which emphasize the negative impact of stress and negative affect on readiness towards KS. The results obtained can be explained by referring to the phenomenon of *attentional tunneling* which justifies the narrowing of the scope of attention and the amount of information processed in a

stressful situation. Easterbrook (1959) explained this mechanism in his theory, arguing that in a situation of strong emotional arousal, there is a focus on the most important stimuli associated with the arousal and a disregard for stimuli less relevant to the situation. The mechanism of changes associated with selective attention under stress is confirmed by numerous empirical studies (Chajut, Algom, 2003; LeBlanc, 2009; Vedhara et al., 2000).

On this basis, it can be concluded that employees who experience high levels of stress at work focus primarily on the source of the stress and the possibility of removing it. In contrast, knowledge sharing undertaken voluntarily between employees is an extracurricular activity that requires cognitive engagement and strains attentional resources. According to the concept of attentional selectivity, voluntary KS-related activity may therefore be overlooked in favor of content that is prioritized in light of the stress experienced. As an extracurricular and optional activity, it may also give way to meeting occupational requirements that are obligatory and determine one's continued employment. Interesting results were also obtained regarding the relationship of selected factors and readiness towards KS according to the level of perceived stress at work. The study revealed that in the group of women with low levels of stress, older age was associated with greater readiness towards KS, while in the group of men declaring high levels of perceived stress at work, shorter seniority was associated with greater readiness towards KS. The higher propensity to share knowledge among older women compared to younger women is also confirmed by the results of other studies (Burmeister, Fasbender, & Deller, 2018; Dunham, Burt, 2011; Krzyżowska, 2023). This propensity can be explained by the soft skills expertise increasing with age, especially in terms of cooperation, as well as the development of empathy (in women it can be stimulated through motherhood), all of which are conducive to KS behaviors.

At the same time, the above-mentioned relationship became apparent only in the group of women declaring low rates of perceived stress at work. This may mean that experiencing stress plays a key role in readiness towards KS in the surveyed group of IT employees – in the least stressed group, older women are more willing to share knowledge than younger ones, while in the groups with medium and high levels of stress, similar relationships did not emerge. It is likely that the moderate and intense stress experienced reduces readiness towards KS in a similar way regardless of the age of the respondents. In men, no correlation between age and readiness towards KS emerged in any of the groups due to the level of perceived stress at work, which means that for women who report minimal stress at work, age will be more important for readiness towards KS than for those men who rate their stress at work at a similar level. Furthermore, it can be concluded from the results that age does not determine the readiness towards KS of the men surveyed, both for those who experience and those who do not experience stress at work.

In contrast, seniority proved to be a significant variable in the group of men indicating high rates of stress, where the shorter the seniority, the greater the readiness towards KS. The result may be surprising in view of some studies that indicate that professional experience and job security are conducive to KS (Bartol et al., 2009; Doulani, Mohammadi, Bradar, 2020; Mehrizi, 2016), or other studies by the author, where employees with more than 5 years of seniority showed greater readiness towards KS than employees working for less than 5 years (Krzyżowska, 2023). Indeed, seniority determines the development of one's professional competence, sense of efficacy and confidence in one's professional functioning, thus influencing the growth of work experience which has a strong effect on knowledge sharing in the workplace (Oye, Salleh, Noorminshah, 2011). However, the aforementioned studies did not take into account the stress factor, which may have a significant moderating effect on the relationship in question (the relationship was revealed only in the group that indicated the highest rates of stress at work). It is worth noting that very severe stress can affect one's way of responding, resulting in a greater tendency toward automatic, instinctive reactions, the kind that aim at survival (Bourne, Yaroush, 2003). Perhaps younger men who are still uncertain of their competence and their professional position when confronted with a highly stressful situation are more inclined to share the knowledge they already have, hoping that, according to the rule of reciprocity, other employees will also share their knowledge with them. Moreover, they want to get into the good graces and win over the community of co-workers in this way. Thus, this may be a kind of automatic reaction "aimed at survival" and ensuring a stable professional position in a relatively new professional environment, which ultimately results in a greater readiness towards KS in this group than in the group of highly stressed employees with longer seniority.

This relationship therefore points to more detailed connections with readiness towards KS resulting from the influence of variable coexistence, which can be found against the background of the main relationship studied – stress and readiness towards KS. Interestingly, similar relationships did not emerge in the women's group; it is possible that women are less likely than men to evaluate work as a resource that they would have to care about first under conditions of severe threat. However, these suppositions require detailed empirical verification.

6. Conclusions

The aim of the research presented herein was to provide an answer to the following research question posed in this paper: *Is there a relationship between the level of perceived occupational stress and readiness towards knowledge sharing among IT sector employees?* The research findings acquired from a group of employees of the IT sector indicates that in the surveyed group of IT employees, a higher readiness towards KS was found among employees who scored low in terms of perceived stress at work. Furthermore, when testing the relationship in question, significant connections were found when selected variables were taken into account, such as age (among women with low rates of perceived stress at work, older women showed greater readiness towards KS compared to younger women) or seniority (among men reporting high rates of stress, those with shorter seniority showed greater readiness towards KS than those with longer seniority).

Conclusions drawn from the results of this study highlight the importance of the stress experienced for the functioning of the employee in the workplace and the organization as a whole. As highlighted in the introduction, KS is important for organizational performance, and workplace stress is a factor that generally has a negative impact on employees' readiness towards KS, especially the kind of readiness that does not stem from anxiety. In the IT industry, this is all the more important because IT services are among the knowledge-intensive services in which most activities are intellectual tasks (Khatri et al., 2010). The process of knowledge exchange in IT organizations should therefore be constantly improved, and this should be achieved, among other things, by understanding the determinants of KS.

The conclusions from the research imply significant practical recommendations for the managers of the IT sector:

1. It is important that they are aware of the negative impact of stress on employees' intrinsic motivation towards KS and thus that they implement stress prevention programs in the workplace and measures to counteract the consequences of stress experienced by employees at work.
2. It is important that, in the context of stimulating positive motivation towards KS, they pay particular attention to younger women who do not declare high stress and men with high rates of perceived stress at work with long seniority.

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