

FACTORS DETERMINING KNOWLEDGE HIDING IN MEDIUM AND LARGE ENTERPRISES IN POLAND

Sebastian SKOLIK

Czestochowa University of Technology, Faculty of Management; sebastian.skolik@pcz.pl,
ORCID: 0000-0003-2364-4442

Purpose: The aim of the article was to capture factors associated with knowledge hiding in Polish enterprises. This was important due to the negative impact of a lack of knowledge sharing on the functioning of organisations. On the one hand, the author attempted to verify previous assumptions; on the other hand, a new category of variables in the form of emotions accompanying cooperation with colleagues was taken into account in the study.

Design/methodology/approach: The study drew on previous publications identifying the dimensions of knowledge hiding. Based on the CATI method, empirical material was obtained from 575 employees of Polish enterprises, some of which was used in the presented study. Four formulated hypotheses were tested using Spearman's rank correlation coefficient.

Findings: The study showed that frustration was the main negative emotion associated with knowledge hiding, particularly in the case of remote work. Yet, no significant statistical correlations were observed between positive emotions and the mitigation of knowledge hiding. Other factors clearly related to knowledge hiding in Polish enterprises were the pressure to innovate and the perceived general atmosphere of competitiveness.

Research limitations/implications: Due to the fact that only approximately 20% of respondents admitted to hiding knowledge, the research would need to be repeated on a much larger sample.

Practical implications: The study results may allow for modification of enterprise policies regarding pro-innovation activities in the context of the possibility of sharing knowledge between employees.

Originality/value: Certain statistical correlations between emotions associated with collaboration and the dimensions of knowledge hiding were observed. Most of the earlier studies suggested such correlations based on observation of other variables.

Keywords: knowledge hiding, knowledge management, medium and large enterprises, Polish enterprises, interpersonal relations.

Category of the paper: Research paper.

1. Introduction

The development of digital technologies has contributed to rapid changes in the structure of societies, primarily transforming industrial societies into a new type known as the information society or network society. The changes were mainly based on the employment of a greater percentage of workers in the service sector, while industry and agriculture began to constitute an increasingly narrow margin. At the same time, the knowledge economy (Westlund, 2006) and the sharing economy became more important (Castaneda, Cuellar, 2020). Therefore, more and more research focused on improving the quality of knowledge sharing, both within and between organisations (Barney, 1991; Foss et al., 2009; Delery, Roumpi, 2017). Although knowledge sharing remains a popular research topic, the number of publications on knowledge hiding has increased over the past decade.

Researchers addressing that issue look for factors contributing to knowledge hiding in enterprises and for variables that may limit that tendency. In this regard, the dimensions of knowledge hiding were determined (Connelly et al., 2012), associated with psychological, relational and structural factors. Previous papers considered factors such as the dark triad (Karim, 2022; L. Wang et al., 2024a; Y. Wang et al., 2024b), alignment of HR systems and relational climates (Batistič, Poell, 2022) or workplace ostracism, *inter alia* (Han et al., 2024).

The aim of this paper was to identify the determinants of knowledge hiding in medium and large companies with more complex interpersonal relationship structures. Emotions accompanying online and offline collaboration, as well as the organisational atmosphere consisting of attitudes towards innovation and competitiveness were considered the factors that could potentially influence knowledge hiding. The research was conducted in December 2022, with the participation of employees of Polish enterprises with over 50 employees. Four research hypotheses were adopted and statistically verified.

The remainder of the article presents a review of the literature on knowledge sharing and knowledge hiding, research methodology, statistical analysis of research results and a discussion.

2. Literature review in the field of knowledge hiding

The social relations created and modified within an organisation translate into the efficiency of its functioning. Therefore, identifying and explaining factors that negatively affect such relations is an important aspect of research in the social sciences. One such negative phenomenon is knowledge hiding. It contributes directly or indirectly to the following problems: limiting the imagination and creativity, both at the group and individual level (Holten

et al., 2016; Kurniawanti et al., 2023); undermining the reputation of those from whom knowledge is hidden, which may result in them resigning from working in a given organisation (Butt, 2019); reduced individual, team and organisational performance (Hameed et al., 2012); reduced trust between employees (Connelly et al., 2012). It has also been noticed that the escalation of such conduct can easily spread down the hierarchy system, especially in work environments with high distrust and low competitiveness (Kurniawanti et al., 2023). Knowledge hiding is therefore more likely to occur in complex organisational structures, where there are more potential places for the emergence of that phenomenon. However, some studies indicate that knowledge sharing and knowledge hiding coexist in enterprises as related phenomena. They are associated with the notion of coopetition, i.e. simultaneous cooperation and competition. Based on that approach, excessive communication and reliance on a common knowledge base may limit the potential of employees to use their cognitive abilities, which may also inhibit the development of innovation (Yao et al., 2023).

When considering the issue of lack of knowledge sharing between employees, it would be possible to take into account previous research and re-examine the data in terms of the negative impact on knowledge sharing. However, such an approach would not address the problem of deliberate hiding of knowledge from work colleagues (Batistič, Poell, 2022). The concept of knowledge hiding is treated by some authors as an element of a broader phenomenon referred to as knowledge withholding. In addition to knowledge hiding, the following are also considered: knowledge-sharing hostility, knowledge contribution loafing and knowledge disengagement. That broader view covers both intentional and accidental behaviour that prevents knowledge from spreading throughout the organisation (Gonçalves, Curado, Oliveira, 2023).

A considerable amount of the literature produced over the last decade is based on the typology of dimensions of knowledge hiding proposed by Connelly et al. (2012). Those dimensions are considered at the behavioural and motivational levels and are referred to as playing dumb, evasive hiding and rationalised hiding. Playing dumb is a behavioural strategy in which persons who hide knowledge pretend to be ignorant and convince others of their lack of knowledge in a given field. Evasive hiding involves giving incorrect or incomplete information. In this case, the persons hiding knowledge do not want to be treated as ignorant but are also unable to formulate a good "excuse" as to why they do not wish to provide the information. Rationalised hiding, in turn, is a strategy in which a co-worker or supervisor indicates external reasons for hiding knowledge or blames a third party who, in their opinion, does not allow information to be shared (Farooq, Sultana, 2021).

Previous studies have revealed a number of factors that may contribute to knowledge hiding. As Yang and Lin (2023) showed, trust towards leaders and the strength of employee identification with them contribute to knowledge sharing and a greater tendency toward transparency in cyberspace. Meanwhile, negative relations, such as toxic leadership, foster knowledge hiding. The level of distrust is one of the key variables influencing the decision of

a person to share knowledge or hide it (Farooq, Sultana, 2021). A factor limiting the tendency to hide knowledge may be the awareness of possible support from other members of the organisation. The assumption here is that signalling a desire to support can lead to altruistic behaviour, which can trigger a response in the form of the reciprocity of assistance (Batistič, Poell, 2022). When individuals are alienated and subjected to some form of ostracism, they are more likely to withhold information from others. More or less overtly revengeful behaviours may occur (Han et al., 2024), which may lead to a negative reaction in the form of vendetta. The conservation of resources theory assumes that ostracism is a major factor in knowledge hiding (Han et al., 2024).

Sometimes, isolation may be the consequence of placing a person in a position well below the employee's expectations. In such a case, they often have the feeling of being over-qualified. If employees discover that their competencies are much higher than those required for a given position, this may lead to "job boredom". Consequently, they begin to experience frustration, dissatisfaction and anxiety - a range of negative emotions. When comparing themselves with work colleagues, they may feel that they are not appreciated enough and are not able to make full use of their potential. Hiding knowledge in this case becomes a substitute for power and a sense of control. It may also be the result of a fear of such employees that they will no longer be needed if they share their unique knowledge. The perception of inequality or unfair treatment is likely to lead to retaliatory behaviour (Khan et al., 2024). Research indicates that the introduction of "organisational justice" by senior employees contributes to greater comfort at work and a reduction in the tendency to hide knowledge. Importantly, that trend is evident not only in behavioural acts but also in the intentions of employees (Mahmood et al., 2023).

There are structural possibilities to limit the negative phenomenon of avoiding knowledge sharing. In specific cases, changes in the composition of teams may contribute to the above, although in general, the consolidation of good relations between employees and intragroup integration favour knowledge sharing. Hiding knowledge is associated with a sense of "rootedness", and inequalities in established social structures may lead to the alienation of some employees (see Zhang, Takahashi, 2024). Knowledge hiding can also be influenced by the general competitive atmosphere within an enterprise. In that case, knowledge is hidden strategically and treated as a unique resource, it may even be one of the rules in that type of organisations (Khoreva, Wechtler, 2020; Yao et al., 2023).

In addition to relational aspects, personality variables are also identified as factors contributing to knowledge hiding. Clear correlations were noticed in the case of the dark triad: Machiavellianism, psychopathy and narcissism. In a study by Pan et al. (Pan et al., 2016), Machiavellianism was found to be a clear predictor of knowledge hiding, and subsequent studies confirmed that all three components of the dark triad were the predictors (Pan et al., 2018; Karim, 2022). Those features lead to more egoistic attitudes in the workplace at the expense of altruistic attitudes and are less likely to involve empathy towards other employees (Karim, 2022).

Considering the several dimensions of knowledge hiding proposed by Conelly et al. (2012) allows for a better determination of the cases in which it may cause positive or negative effects. When individuals rationalise such behaviour, their well-being and good opinion of themselves as co-workers decline. To rationalise such conduct, they have to engage emotionally, which causes stress and a reduction in overall comfort. In the short term, however, they achieve high innovative performance. In contrast, evasive hiding and playing dumb are effortless and do not lead to lower well-being or reduction of employee performance (Khoreva, Wechtler, 2020). In research on the correlation between knowledge hiding and the dark triad, it was noticed that narcissists are involved in both playing dumb, evasive hiding and rationalised hiding. Individuals with high rates of psychopathy avoid playing dumb, while evasive hiding is unlikely to occur in Machiavellian personalities. This is explained by the fact that playing dumb requires a diplomatic, empathetic approach, which is not the feature of psychopathic individuals, whereas Machiavellians may lose a lot if fraud is detected, which is an element of the evasive hiding strategy (Y. Wang et al., 2024a).

If one considers Machiavellian intelligence essential for efficient group operation and management, the evasive hiding strategy is particularly unfavourable in the case of leaders. This is because the group led by the leader expects action at a high level of competence. Provision of incomplete or false information, if discovered, may result in weakening the authority of the superior. Consequently, such behaviour contributes to several negative symptoms in leaders, such as low self-confidence, high need for self-control, depression, high level of anxiety and lower self-esteem (L. Wang et al., 2024b). The discussed issue may be considered a bit more broadly in the context of expecting knowledge transfer from other employees. Individuals who share knowledge proactively, including leaders, are less appreciated when information is not shared than those who tend to pass on knowledge reactively (see Yao et al., 2023).

Although the problem of knowledge hiding is exploited in an increasing number of publications, it is worth looking for new approaches and identifying further variables related to that phenomenon. Research findings may vary depending on organisational culture, therefore it is beneficial to conduct the studies in societies where little research has been conducted in that area to date.

3. Research method

The research to identify factors associated with knowledge hiding in Polish enterprises was conducted in December 2022. It was part of a broader study on social capital, knowledge sharing and interpersonal relations conducted by the employees of the Czestochowa University of Technology in the Department of Applied Sociology and Human Resource Management.

The research was quantitative in nature and was carried out using the CATI technique. The study respondents were selected randomly and the sampling frame was the REGO database of Polish enterprises; only companies employing more than 50 people were included in the research. The sample size was 575 persons. There were 1,532 participants at the beginning of the study, but 957 of them interrupted the interview without being able to complete it at a later date.

When examining the phenomenon of knowledge hiding, a distinction was made between the dimensions indicated by Conelly et al. (2012), 4 questions relating to each of the dimensions, i.e. playing dumb, evasive hiding and rationalised hiding were included in the interview questionnaire. The form of the questions was a five-point Likert scale.

Taking into account the results of previous studies that indicated the role of emotions in the phenomenon of knowledge hiding (Khoreva, Wechtler, 2020; Batistič, Poell, 2022; Khan et al., 2024; L. Wang et al., 2024b), the following hypotheses were adopted:

- H1: Hiding knowledge by an employee is associated with the occurrence of negative emotional states, in particular anxiety, frustration and disappointment.
- H2: Positive emotions, in particular, satisfaction and a sense of support, may negatively affect knowledge hiding.

To determine which emotions accompanied the respondents in their relations with work colleagues, they were asked about the strength of the experienced positive emotions (contentment, satisfaction, kindness, sense of community, sense of support, interest, enthusiasm, relaxation, confidence) and negative ones (sadness, loneliness, anxiety, disappointment, frustration, discouragement, anger, shyness, jealousy, overwhelm). The questions on a five-point Likert scale referred to situations where employees communicated with others both directly and remotely.

One of the ambiguous results in previous studies was the correlation between innovation (creativity) and the tendency to hide knowledge. While innovativeness may influence the willingness to share knowledge, knowledge hiding may favour it (Khoreva, Wechtler, 2020; Yao et al., 2023). Taking the above into account, another hypothesis was adopted:

- H3: An innovative environment may influence knowledge hiding, above all, the emphasis on employee individual achievements in that area may promote knowledge hiding.

Earlier studies also indicated that although knowledge sharing should promote competitiveness, the competitive atmosphere within the organisation may contribute to knowledge hiding. Therefore, the following hypothesis was adopted:

- H4: The competitive atmosphere and sense of success of an organisation translate into the tendency to hide knowledge.

The indicators for H3 and H4 were the answers of the respondents to the questions on creativity, innovation, assessment of competitiveness and financial success at individual and organisational levels.

4. Study results

To determine the dimensions of knowledge hiding in large and medium-sized enterprises in Poland, the respondents were asked four questions relating to each of the three analysed dimensions. The task of the respondents was to recall a situation when they had withheld knowledge and to determine to what extent they agreed with the following statements:

- for the evasive hiding (EH) dimension: I agreed to help the person but I never really intended to (EH1); I agreed to help the person but I provided different information instead (EH2); I informed the person that I would help him/her later, but I delayed my assistance (EH3); I offered the person different information to what he/she wanted (EH4).
- for the playing dumb (PD) dimension: I pretended I didn't have up-to-date information (PD1); I said I didn't know the answer, even though I did (PD2); I pretended I didn't know what that person was asking for (PD3); I said I wasn't very knowledgeable about the subject (PD4).
- for the rationalised hiding (RH) dimension: I explained that I wanted to help but I could not (RH1); I explained that the information was confidential and only for authorised persons (RH2); I informed the person that top management did not allow anyone to share such knowledge (RH3); I refused to help (RH4).

Prior to that, a filter question was asked to verify whether the employee hid knowledge from time to time. As a result, only 106 out of 575 respondents admitted that they sometimes hid knowledge. In the group of respondents selected in such a way, the playing dumb strategy was least likely to be used. None of the respondents confirmed that they definitely used that strategy in the workplace, while 7 to 22 persons admitted that they rather used it. For evasive hiding, 14 to 31 persons admitted that they definitely used that strategy, while for rationalised hiding, 23 to 39 respondents confirmed using it. Evasive hiding was the least frequently rejected strategy by the employees (the lowest number of "rather not" and "definitely not" responses). Detailed data is presented in Figure 1.

Spearman's rank correlation coefficient was used to verify the hypotheses, as all variables were obtained through questions on an ordinal Likert scale. As the number of persons declaring knowledge hiding was not large, a small number of significant statistical correlations were detected, and the Spearman coefficient values were low. When verifying the hypotheses, $p < 0.05$ was assumed.

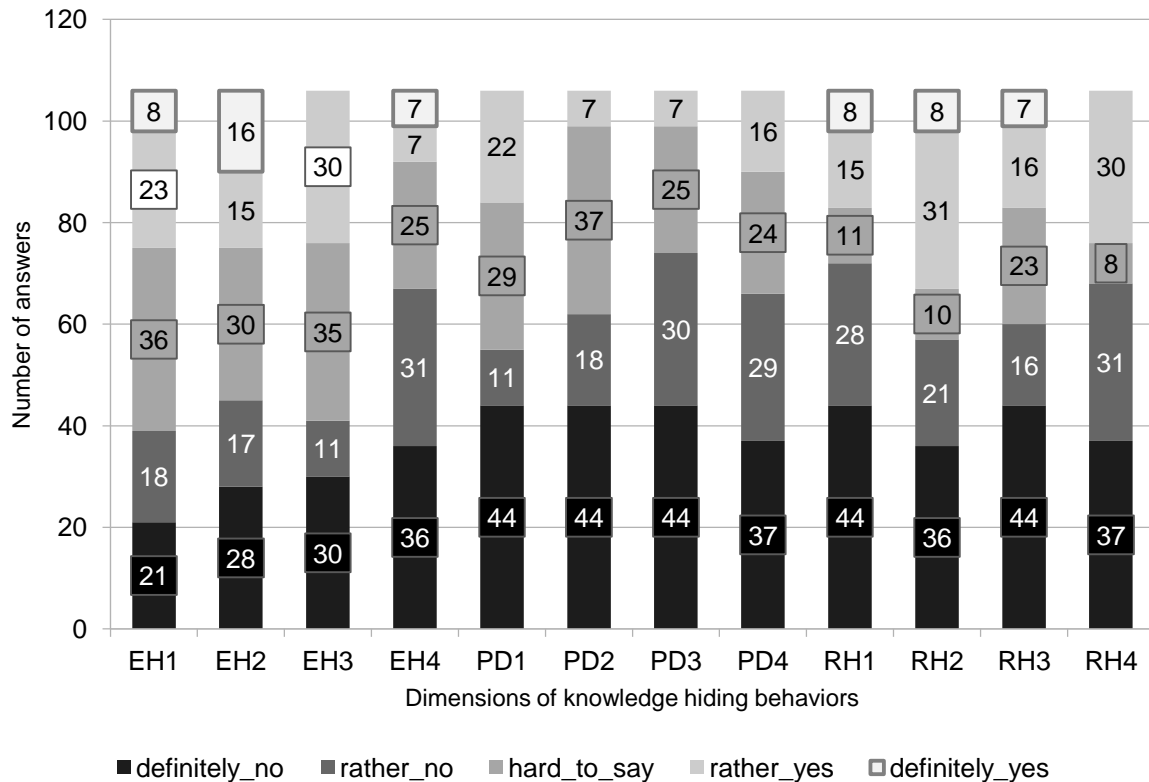


Figure 1. Comparison of dimensions of knowledge hiding among surveyed employees. EH stands for evasive hiding, PD stands for playing dumb, RH stands for rationalised hiding. N = 106.

Source: own elaboration.

H1 was partially positively verified. Knowledge hiding, particularly in the case of playing dumb strategy, correlated with negative emotions. However, those emotions were not anxiety or disappointment. Instead, frustration was associated with all the dimensions of knowledge hiding. This was particularly true for remote working. Furthermore, it was noticed that the emotion accompanying knowledge hiding was discouragement. Both of the emotions can be associated with a high level of stress and a tendency to isolate, which confirms the research findings so far.

Considering positive emotions, their role in limiting knowledge hiding seems questionable. Only partially, one of the dimensions of knowledge hiding correlated negatively with satisfaction and kindness. The the case of the sense of support, there were no significant statistical correlations. Moreover, the sense of community correlated positively with the evasive hiding and playing dumb strategies. Thus, H2 should be rejected. Spearman's rank correlation coefficient values are presented in Table 1.

Table 1.

Observed correlations between emotions accompanying interpersonal communication and dimensions of knowledge hiding

Experienced emotions	EH1	EH2	EH3	EH4	PD1	PD2	PD3	PD4	RH1	RH2	RH3	RH4
	REMOTE COMMUNICATION											
Satisfaction							-.192055					
Kindness							-.211517					
Sense of community			.195342					.242596				
Sadness												.221257
Frustration		.254814	.196461	.191580	.247238	.218337	.239921	.252070		.308160	.262846	.230190
Discouragement										.232983		
	DIRECT COMMUNICATION											
Frustration						.193163						
Discouragement					.210430	.205072						
Anger						.196191						

Note. The table shows Spearman's rank correlation coefficient values only for situations where there was a statistically significant correlation between the variables for $p < 0.05$. $N = 106$.

Source: own elaboration.

To verify H3, the employees' assessment of their environment in terms of innovation was taken into account. There were questions about the expectation of innovation and creativity from employees, the employees were also asked to evaluate the management's innovation efforts. Additionally, the assessment of the organisation's research and development activities was taken into account. For the majority of results regarding expectations and support for innovation, a positive correlation was observed with one of the dimensions of knowledge hiding, but no dimension was favoured. Thus, H3 was positively verified. In one case, however, a negative correlation was observed. The increase in employee innovation translated into a lower tendency to use the rationalised hiding strategy. It can be assumed that if all work colleagues show innovative tendencies, there are fewer opportunities for an individual to stand out. However, if pressure is introduced (expectations from superiors, support from the management), there may be more personal relations between the employees and the context of acting as a group seems less important. Statistical correlations between individual components of the innovative work environment variable and dimensions of knowledge hiding are presented in Table 2.

Table 2.

Observed correlations between the assessment of the work environment innovativeness and dimensions of knowledge hiding

	EH1	EH2	EH3	EH4	PD1	PD2	PD3	PD4	RH1	RH2	RH3	RH4
Increase in employee innovation										-.197299		
Known development of innovative activities			.220337					.240942	.198906			
Expectation of employee development to support innovation										.234924		
Appropriate use of employee creativity		.263901	.204855	.210052		.311293				.245162	.246099	
Successful innovations resulting in envy from work colleagues			.209483			.254672						
Expectation of employee creativity and innovation	.266357											
Assistance from the management in implementing innovation	.195271	.312162					.225298	.214627		.244081	.204376	
Communication of the expectation of innovation by the management			.224283									
Supporting innovative solutions by the management			.215691					.208428				
Increase in research and development activity			.229945		.202098	.294436	.210678		.224044	.191979	.230137	
Preference for innovation and originality												.191595

Note. The table shows Spearman's rank correlation coefficient values only for situations where there was a statistically significant correlation between the variables for $p < 0.05$. $N = 106$.

Source: own elaboration.

The last hypothesis assumed that the general competitive atmosphere could translate into knowledge hiding. While earlier works focused on competitiveness between employees, the presented research dealt with the general assessment of the competitiveness of a given enterprise. In the analysed cases, a positive correlation was observed between the assessment of the organisation's financial success and knowledge hiding (Table 3). Thus, H4 was positively verified and it was additionally noticed that correlations were more frequent with the rationalised hiding dimension. It can be assumed that in a competitive environment, attitudes typical of *homo oeconomicus* become established, which requires greater rationalisation of an individual's actions.

Table 3.

Observed correlations between the assessment of a given enterprise's success in relation to its competition and the dimensions of knowledge hiding

	EH1	EH2	EH3	EH4	PD1	PD2	PD3	PD4	RH1	RH2	RH3	RH4
Larger market share than the competition					.216855					.229007		
Incurring lower costs than the competition									.205798			
Increase in revenue compared to the previous year				.212044	.25013	.206751			.221981	.239997	.228594	.218624
Increase in capital value compared to the previous year		.20119				.242612	.213254			.206853	.196257	
Increase in assets compared to the previous year	.210489											

Note. The table shows Spearman's rank correlation coefficient values only for situations where there was a statistically significant correlation between the variables for $p < 0.05$. $N = 106$.

Source: own elaboration.

5. Discussion

Earlier studies suggested that knowledge hiding was accompanied by stress associated with the fear of, e.g. exposing the management's lack of knowledge. Disappointment, frustration and anxiety were indicated as emotions contributing to knowledge hiding by individuals (Khan et al., 2024; L. Wang et al., 2024b). In the presented study, the emotion that correlated most strongly with the different dimensions of knowledge hiding was frustration, especially in the case of remote work. A significant statistical correlation was also noticed between knowledge hiding and discouragement. Anxiety, however, was not the accompanying emotion in that case. The statistical correlation does not necessarily mean that frustration and discouragement are the emotions that influence reluctance to share knowledge, as they may be the result of individuals making decisions to hide knowledge. However, it should be assumed, as in the research on other factors (Han et al., 2024), that a response may occur here - the occurrence of such emotions may reinforce attitudes of being reluctant to share information with co-workers.

Factors that are ambiguously associated with knowledge hiding are creativity and innovation. According to some authors, knowledge hiding contributes to their weakening (Holten et al., 2016; Kurniawanti et al., 2023), according to others, innovation may weaken with the tendency of continuous knowledge sharing among employees (Yao et al., 2023). The presented study indicates that innovation positively correlates with the tendency to hide knowledge in almost every case. The questions asked to the respondents did not refer to their self-assessment in terms of innovation activities but to the perception of expectations within the

organisation and the actions of the organisation and the management undertaken to increase innovation. Employees' self-assessment could have been far from objective in this respect, due to the tendency of people to evaluate themselves positively. However, the evaluation of expectations could have been assessed as pressure to act innovatively, which does not necessarily involve acceptance of such an attitude.

The competitive atmosphere and sense of economic success of an organisation were also factors associated with knowledge hiding. The results are similar to those obtained in previous research, where it was noticed that employees hid more knowledge in the high market pricing climate. In the studies, market pricing relational climate was defined as that characterised by rational calculation of cost-benefit analyses, as well as comparison of profit and loss (Batistič, Poell, 2022). Thus, in addition to the pressure for individuals to be innovative and - consequently - more efficient, the general competitive atmosphere also favours knowledge hiding.

6. Summary

The conducted study has identified factors that may contribute to knowledge hiding in enterprises. It confirmed previous research findings regarding the statistical correlation between knowledge hiding and innovation and the competitive atmosphere in the organisation. Due to the fact that previous studies did not focus on emotions as a factor that could influence knowledge hiding, that variable was also taken into account. It was assumed that anxiety, discouragement and frustration could have a positive impact on the discussed phenomenon. However, no statistical correlation was confirmed between the sense of fear in relations with co-workers and knowledge hiding, while such a correlation existed between knowledge hiding and frustration.

Even though the research was conducted among 575 employees, less than 20% of them admitted to even occasional knowledge hiding. For that reason, the correlation coefficient values may be low. Research on a larger sample could make it possible to capture stronger statistical correlations and build appropriate models.

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