Knowledge Management in the Context Of Remote Work in the Opinions of Employees: Challenges and Opportunities

Leszek Cichobłaziński
Częstochowa University of Technology, Poland
leszek.cichoblazinski@pcz.pl

Abstract: The article presented here focuses on the determinants of knowledge management in a remote work environment. Information and knowledge management is an essential part of organizational management, which has been undergoing major changes as electronic media, mainly internet-based platforms, have been replacing traditional interpersonal contacts completely. Knowledge production, distribution and clarification are all subject to significant transformations under conditions of limited face-to-face contact. Changes in this scope imply significant problems in knowledge management, both at the level of knowledge creation and knowledge distribution as well as information perception and exchange. Due to the above, there is need for an in-depth analysis of the issue, both at the theoretical level and, above all, at the empirical level. The main goal of this research is to show how remote work affects knowledge management in an organization. The research was conducted on a sample of 387 respondents belonging to the Z generation. A questionnaire based on the Likert scale was used for this purpose. The general conclusion that can be drawn from the research highlights the fact that, in relation to knowledge management, remote work mode works to varying degrees depending on the industry in which the organisation operates as well as its size.

Keywords: Knowledge management, Human resources Management, Remote work

1. Introduction

Even though remote work has been known and used for a long time, the COVID-19 pandemic has forced its wider application. Taking into consideration the increasing importance of knowledge management in organisations, it is worth noting the impact that remote work shows in terms of this very sphere of functioning. Although the presented results constitute part of research focused on a much broader issue, knowledge management is still an important part of it. The main research question posed in this paper is: how does remote work affect knowledge management in an organisation?

The first part of this article constitutes of a review of the literature concerning both knowledge management and remote work. The following section includes a discussion concerning the results of the study, both in the form of descriptive statistics as well as an analysis of the Kruskal-Wallis significance test. The end of the discussion includes theoretical and practical conclusions arising from analysing the research results.

The issues addressed in this study are relevant from the point of view of both management practice and theory, and that is why the presented results may prove to be helpful for managers managing enterprises from various industries and of various sizes. These findings may also constitute a starting point for further research in this area. That is because remote work may find a permanent place in the life of an organisation, so it is important to take a closer look at the factors determining its effectiveness.

2. Literature Overview

When writing about knowledge management, it is important to present the meaning of the term "knowledge" and the broader conceptual context in which it is used in Organisational Studies. Davenport and Pruskak propose the following meaning of the term: "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. It originates and is applied in minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms." (Davenport and Pruskak 2000, p. 5). Norms, values, or artefacts as elements of organisational culture can include an organisation's knowledge, for example, in the field of how to achieve goals or respond to crisis situations. This also concerns the type of organizational culture, e.g. a culture based on individualism or collectivism, based on competition or cooperation that conveys knowledge about the manners of achieving goals in various ways. Changing this type of knowledge is often much more difficult than technology-type knowledge, as Information Technology concerns the realm of mechanisms regulating human behaviour in organisations, while remaining outside the realm of consciousness. There is one feature of knowledge that is worth emphasizing: people are the ones who possess knowledge and develop it. Similarly, to information that comes from data, knowledge comes from information. Information can be transformed into knowledge through the following actions:
The data comes from relevant databases, records, archives, etc. Information comes from messages, but knowledge is born in the minds of people and among people who are professionals in certain areas. Knowledge can also originate from interpersonal contacts, conversations, and learning. Hence, the exchange of knowledge constitutes an important tool for creating and developing knowledge.

Exchanging and sharing knowledge are an inseparable part of organisation management. Some authors point to the role of imitation in developing knowledge (Butler and Grahovac 2012). This is why human contacts, and the favourable social, organisational, and spatial structures are so important in developing knowledge. Of course, there is a big difference between simple imitation and innovation. However, the latter is not possible without the former (Legare and Nielsen 2015). It can be stated that innovation is imitation and added value. In some situations, losing the ability to imitate, due to the lack of social contact, can lead to a loss of knowledge which, once forgotten, can no longer be retrieved (Dimond 2003).

The role of knowledge sharing can be considered at many levels of the organisational structure. This is how Anna Albrychiewicz-Słocińska explains the determinants of knowledge sharing: "Sharing knowledge behaviour can be called an engine of exchange and creating knowledge processes. (...) Knowledge sharing behaviour is a first step to knowledge transfer, which is a one-way action, yet the final and most desirable phase is knowledge exchange as it reflects to knowledge seeking action." (Albrychiewicz-Słocińska 2015, p. 70)

The phenomenon of knowledge sharing has recently been strongly explored. It is significant due to the widely used digital technologies (Kukowska & Skolik 2021). However, this paper focuses on analysing the phenomenon at the micro level, i.e. at an enterprise level. It is precisely within an enterprise (or other institution) that knowledge sharing is most vulnerable to various disruptions caused by replacing “face to face” employee relationships by remote relationships (Nemțeanu, Dabija & Stanca 2021). Remote work also impacts the process of knowledge sharing in terms of organisational hierarchy and distributing power in organisations (Skolik & Karczewska 2021). In this context, it is important that knowledge sharing is not artificially restricted by dysfunctional organisational structures. Sometimes the source of these dysfunctions may consist in the managers themselves, who deliberately obstruct the flow of knowledge believing that knowledge is power (Cichoblażiński 2017).

3. Remote Work
A separate issue to focus on is remote work. The relationship between remote work and knowledge exchange is becoming an important issue. This concerns the issue of how much does remote work help or hinder knowledge sharing within an enterprise? The apogee of remote working came during the COVID-19 epidemic. It looks like its application will increase. "While some companies continue to thumb their noses at The Great Resignation and insist that employees come back into the office, data scientists at Ladders insist that the writing is on the wall. Remote work is here to stay. According to their projections, 25% of all professional jobs in North America will be remote by the end of 2022, and remote opportunities will continue to increase through 2023." (Robinson 2022). For this reason, the problem seems important, both from a scientific and practical point of view, because defining remote working is not easy. This is how Agnieszka Jeran comments on the issue: "Remote work can be treated as a special case of flexible work - out of the four dimensions of flexibility: time, relationship permanence, location, and the form of the contract between the employee and the employer, in this case it mainly concerns the aspect of location - because remote work constitutes primarily work carried out away from the employer’s premises, depending on the form in the employee's place of residence or in a different location, sometimes on the move, i.e. during the employee's journey (literal, as it is not a case of delegation)." (Jeran 2016, p. 50). However, it is possible to come across definitions that shed a slightly different light on the issue of remote work. Remote work (also known as work from home [WFH] or telecommuting) is a type of flexible working arrangement that allows an employee to work from remote location outside of corporate offices. For employees who can perform work offsite, this arrangement can help ensure work-life balance, access to career

---

1The best example is Tasmanian Aborigines who gradually began to forget well known inventions and Technologies, i.e. striking fire, swing clothes or fishery when their Island disconnected from Australian continent.
opportunities or reduced commutation costs. Benefits for the company include increased employee satisfaction and retention, increased productivity and cost savings on physical resources. Remote work arrangements can be temporary or permanent, part-time or full-time, occasional or frequent. Remote work requires policies governing equipment use, network security and performance expectations (Gartner Glossary 2023). This definition emphasizes above all the practical aspects of remote work, such as reducing commuting costs or the possibility to better manage one's career.

4. Methodology
This empirical research was conducted among the employees of Polish companies which used this type of work in full or hybrid form during the COVID-19 pandemic and afterwards. The survey was conducted in autumn 2022 among people belonging to Generation Z. It was carried out among 387 people. The questionnaire was based on a Likert scale. Generation Z was chosen because it is currently the group with the greatest experience in remote work and having the greatest competence in this area. In addition, these people will be the main employee in the future on the labor market where the remote mode will dominate.

The results obtained for the dependent variables were correlated with the independent variables. In addition to traditional variables such as age and gender, there were variables related to strictly organisational aspects, such as the size of organisation, the industry in which it operates, or the length of service and position held.

The cognitive purpose of the research is to fill the knowledge gap on knowledge management processes in remote work settings. The results of the research are ultimately to be used to formulate generalisations that extend organisational theory in the field of knowledge management.

The research results presented in this paper are part of a quantitative survey entitled: "Managerial aspects of managing remote work", carried out among young people, working remotely and representing Generation Z. The survey was conducted in December 2022.

The study presents an excerpt from the results of a survey concerning respondents' views on the impact of remote work on knowledge management. In terms of the conducted study, among other things, the following problem has been posed: how does remote work affect knowledge management in an organisation? The study was carried out with the use of quantitative research methods which take advantage of the survey technique. The study included young people, representatives of Generation Z, whose experience of working remotely extends to at least 2022. Due to the fact that there are no statistics concerning the number of people aged 15-34 performing remote work in Poland, the focus was on the group of young people representing the aforementioned category who are economically active. Based on the 2021 Statistical Yearbook, the size of the working population in Poland in the age range of interest to the researchers was determined at 4,802 thousand people. Table 1 presents the structure of the study population by gender and age. For the population estimated in such a manner, with the following statistical assumptions: fraction size: 0.5; confidence level: 95%; maximum error: 5% the study sample size was set at 384 persons. The study was carried out by a specialist market research agency - Fieldstat Ltd. The study was carried out using quantitative research methods, taking advantage of CATI (Computer Assisted Telephone Interview - 50% of respondents) and CAWI (Computer-Assisted Web Interview - 50% of respondents) telephone survey techniques. The mixed technique was chosen because of an increased direct contact with the respondent. Contact was made with 2,783 persons working remotely. Some people declined to participate, some were could not participate due to the survey criteria (e.g. no experience of remote working in 2022) or exhausting the sample in terms of age or gender. The assumption regarding the experience of remote working in 2022 was related to eliminating the group of workers whose work was organised remotely only due to the COVID-19 outbreak. This is because these workers most often performed their duties and tasks in an extraordinary mode, significantly deviating from the conditions for remote work defined in the literature, the primary and basic of which assumes the freedom to choose this particular form of work. The opinions of respondents forced to perform their work remotely due to external circumstances could therefore lead to falsified conclusions concerning attitudes and beliefs.

Table 1: Structure of Respondents by age and Gender
In the end, 388 correctly completed survey questionnaires were obtained (redundant surveys do not disrupt the planned structure of the study group).

The used research tool consisted in a standardized questionnaire consisting of 57 closed statements and eight questions concerning the socio-demographic characteristics of the respondents. A Likert scale (the so-called Likert scaling technique) was used for the responses, which makes it possible to determine the relative intensity of the various responses (Babbie, 2004, p. 192). This form allows for a reliable and quick analysis of the collected material, as well as uniformity and ease of elaboration (Churchill, 2002, p. 309). The research tool (questionnaire) is proprietary and was prepared by members of the research team - employees of the Department of Applied Sociology and Human Resource Management, Faculty of Management, Częstochowa University of Technology.

The STATISTICA software was used in the process of compiling the research results. To assess the significance of differences in the analyzed variables, non-parametric tests were used: Mann-Whitney U test (UMW), Kruskal-Wallis ANOVA (AKW) test, Chi-square test. The obtained statistics were analysed using a publication by A. Stanisz (2006, pp. 369-391). Spearman's rank correlation coefficient was used to assess the strength of correlations occurring between variables. Four questionnaire validity procedures have been used: content (Rossiter 2008), face (Czakon 2014), construct (Cronbach and Meehl 1955) and nomological (Czakon 2014) ones. The scale reliability was validated using Cronbach’s alpha that is a measure of internal consistency (α = .970019).

For the purpose of analyzing the study results, a number of statistical hypotheses were adopted concerning the existence of significant differences in the statements of respondents in relation to their socio-demographic characteristics. It was assumed that H0 constitutes the hypothesis concerning no differences due to the grouping variable, while H1 is an alternative hypothesis about the occurrence of such differences. These hypotheses were verified using the aforementioned statistical tests allowing to reject the null hypothesis concerning the lack of significant differences and accepting the alternative hypothesis on the existence of differences in the answers provided by respondents with regard to the individual independent variables. The study presents the relationships verified with statistical tests, authorizing to draw conclusions on the regularities in the studied group.

The application-based purpose of this study is to develop methods to support effective knowledge management when working remotely. In the longer term, this research is intended to create a model for knowledge management in the large-scale use of remote work. The point is that the benefits of remote work (e.g. reduced labour costs) are not offset by counter-productive consequences in terms of knowledge management within the organisation.

5. **Empirical Section Part 1 - Frequency Analysis**

At this stage, the distributions of responses to questions relevant to the posed research problem, namely the question concerning a relationship between remote work and knowledge management, will be analysed.

The first question analysed in terms of analyzing the managerial aspects of remote working is whether remote working helps to better explain new knowledge to employees? In this question, the emphasis is on clarifying...
knowledge and removing ambiguities of various kinds. Across the entire sample, it is difficult to identify clear correlations, but when the responses to this question are analysed by the variable of gender, some differences can be identified. Men generally state that remote work allows them to better understand the communicated content. Rather agree and completely agree responses were provided by a total of just over 40% of men, while disagree and completely disagree responses were provided by only around 30%. Whereas, in terms of women, the answers to this question are distributed inversely. Circa 42% of female respondents disagree with this opinion, with around 28% of female respondents having an opposite opinion. These results indicate that women believe that face-to-face contact with a supervisor is more conducive to understanding the transferred knowledge than remote contact.

Another issue addressed in this research concerns the transfer of knowledge. It concerns the extent to which remote working is favourable for the transfer of knowledge itself within the organisation regardless of the issues of interpretation, understanding, and clarification. 40.8% of respondents agreed that remote work is conducive to the transfer of knowledge by a supervisor. Only 25% of respondents had a different opinion. It can be concluded that the remote mode works better during the transfer of knowledge itself. This probably concerns the speed and precision enabled by electronic means of communication. This form of communication is most likely to avoid problems with interpreting data, information, and knowledge. In this case, gender is not a differentiating variable: 44.3% of men and 40.4% of women supported such a claim.

More information concerning transferring information under the conditions of remote work can be provided by an analysis of the responses in terms of industry. It should be emphasized that the study sample in this survey was not representative in terms of industry. The most important criterion concerning selecting people for the study was the participation of respondents in working remotely. This is why not all industries are represented to the same extent. Information and communication constitute the industries represented in large numbers. Interestingly, respondents in this sector were not evenly divided in terms of their opinions (around 38% each) of them were supporters and opponents of the thesis that remote working is conducive to knowledge transfer. Employees in this sector perform well in terms of the transfer of knowledge in both remote and stationary work. This may result from the extensive experience of respondents in this industry with work involving transferring and processing information and knowledge, and thus, the form of this work does not matter much to them.

The problem is different in the industrial processing sector. Employees in this sector have a strong preference: 50% of respondents indicated that they disagreed with the statement that remote working promotes transferring knowledge, while 14% agreed with this statement. Such opinions seem understandable, as the nature of the industry means that employees are more likely to use stationary forms of communication. It is likely that, in this industry, employees do not see an opportunity to efficiently transfer knowledge in a remote manner and find that most information and knowledge is most effectively transferred in a stationary mode.

The following analyzed problem is working in favour of collecting and documenting employee knowledge. In this case, the focus is on the sectoral breakdown, a variable that differentiates the answers of respondents in an interesting way. First of all, it is important to note the vital importance for managing knowledge in an organisation, as well as collecting and documenting it. Knowledge resources in the form of databases, but also various types of documentation in the broader sense relating to both information and knowledge in the most general sense, constitute the basis for its processing and handling. The first to be selected was the information and communications industry. The vast majority of respondents employed in the sector agreed with the statement that remote working was conducive to acquiring and documenting knowledge. There were 60% of such indications, while the opposite view was held by only around 20% of the surveyed employees. This implies that employees in this sector appreciate the role of remote working in storing data, information, and knowledge. In order to deepen the knowledge concerning opinions it would be necessary to deepen the conducted research using qualitative methods. However, even such relatively superficial quantitative data suggests that remote work allows using a wide variety of IT tools in order to facilitate the collection of data and information. Email alone and the ability to record meetings held on various platforms such as ZOOM make it possible to access their records at any time.

It is also worth noting those survey results that are not differentiated by industry. An example of this consists in the industrial processing sector. In this case, 36.3% of respondents agreed that remote working was conducive to acquiring knowledge and almost the same number of respondents (37.6%) provided a negative answer. Therefore, as it can be seen, remote work in the industrial sector is of little importance for acquiring and processing knowledge. Traditional forms of work are definitely better suited for this, which is completely
understandable in the case of industry. That is because not all work can be performed remotely and not all knowledge can be stored and processed using the IT tools that are most readily applicable for remote working.

The research results are quite different in terms of the financial and insurance industry. For this industry, positive answers for the statement "remote working is conducive to acquiring and documenting employee knowledge" were provided by 62.5% of respondents, while only 18.7% of respondents disagreed. As shown by the presented results, in finance and insurance the specific nature of this industry means that remote working is well assessed by employees in terms of knowledge accumulation. The significant digitalization of this industry allows using appropriate electronic tools to enable properly acquiring employee knowledge, which in turn helps it to be reused at another time, place, and by other employees.

A different light is shed on the issue of acquiring knowledge by analyzing it in terms of the respondents' preferred future working mode. (Which mode of working do you prefer in the future?) The study included three modes of working: stationary mode, remote mode, and a hybrid mode, combining elements of the previous two. Of the employees who prefer a hybrid mode in the future, 65.1% state that working remotely helps to keep knowledge in the organisation. Only 14.6% have a different opinion. Respondents who prefer to work remotely in the future are not very different in this respect. They also state that working remotely allows for a more efficient accumulation of knowledge at 64.6%. Only 13.2% of respondents in this group have a different opinion. However, the opinions of employees who choose the stationary working mode for the future are different. Of these respondents, just over 41% state that working remotely allows them to acquire knowledge better. A negative opinion concerning this issue was provided by 31.4% of respondents, which is significantly more than was the case among workers choosing the previous two modes. This shows that the experience gained from working remotely has an impact on employees' subsequent preferences concerning the working mode. At least, this is the case for the "knowledge accumulation" variable. However, it can be assumed that employers should take these preferences into account when selecting the mode of work depending on the specifics of the job. If it involves acquiring knowledge, the employee will prefer remote work. However, it should be borne in mind that the differences in indications, which vary at around 10%, are not so great that far-reaching conclusions can be drawn from them. Instead, they help to sensitize employers to the issue.

A following differentiating variable that influenced respondents' answers consists in the size of the organisation. The studied organisations were divided in terms of the number of employees into the following categories: micro-organisations (1-9 employees), small organisations (10-49 employees), medium organisations (50-249 employees), and large organisations (more than 250 employees). Respondents were asked to provide their opinions concerning the statement: Working remotely allows to better explain new knowledge to other employees. In this case, the larger the organisation, the fewer affirmative answers provided by respondents in terms of this statement. Employees working in micro-enterprises provided 53.3% positive responses. Among respondents employed in small businesses, 19.7% completely and partially agreed with this statement. Among workers employed in medium-sized enterprises, 20% provided such answers. When it comes to large companies, such responses were provided by 18.7% of respondents. On the basis of the above data, it can be concluded that remote working allows to better explain the knowledge in small companies than in large ones. This conclusion requires further thought, as it cannot be easily explained at first glance. It can be concluded that employees of smaller enterprises, although accustomed to frequent face-to-face contact on a daily basis, have a fairly positive view of remote work in terms of knowledge clarification possibilities. In this area, employees of larger organisations prefer direct human contact. It is likely that employees of smaller organisations know each other much better than employees of larger companies and therefore find it easier to understand the knowledge being transferred remotely. They simply know what the other person means. Employees of large organisations experience the lack of direct contact more acutely and remote forms of contact are not sufficient for them. Therefore, the following conclusion can be drawn: if work is largely remote in a large organisation, regular face-to-face meetings should be arranged to clarify any doubts concerning the transferred knowledge.

6. Empirical Section Part 2 - Findings

This part of analysis is based on the Kruskal-Wallis rank statistical test. For further analysis, the independent variable of "industry" in which the remote workers were employed was selected. A statistically significant result of the Kruskal-Wallis test indicates whether a variable differentiates the responses provided by respondents.

Independent (grouping) variable: Industry in which remote work was/is performed.

The results of the Kruskal-Wallis test (\( p = 0 \)), at the accepted level of significance (\( \alpha = 0.05 \)), indicate rejecting the verified null hypothesis.
This means that the industry in which the respondents worked had a significant impact on the dependent variable – provides for better explanation of new knowledge to other employees. It turns out that, according to the studied persons, remote working in this case does not help achieve satisfactory results in every industry.

Independent (grouping) variable: Industry in which remote work was/is performed.

The results of the Kruskal-Wallis test (p = 0.0014), with the assumed level of significance (α = 0.05), indicate rejecting the verified null hypothesis. It can be concluded that the industry in which the respondents worked differentiates the answers related to the dependent variable: remote working is conductive to acquiring and documenting employee knowledge. Similarly as in the case of the previous variable, also here the industry has a significant impact on the effectiveness of knowledge management in an organisation.

Independent (grouping) variable: Industry in which remote work was/is performed.

The results of the Kruskal-Wallis test (p = 0.0077), with the assumed level of significance (α = 0.05), indicate rejecting the verified null hypothesis.

Analyzing the above data allows to conclude that, also in this case, the industry significantly differentiates the responses relating to the dependent variable: remote working allows to locate people more easily with the needed knowledge.

Independent (grouping) variable: Industry in which remote work was/is performed. The results of the Kruskal-Wallis test (p = 0), at the accepted level of significance (α = 0.05), indicate rejecting the verified null hypothesis. This variable differentiates the answers of respondents relating to the dependent variable - works in favour of transferring knowledge by a supervisor. Therefore, also in the case of the transfer of knowledge by managers of different levels to their subordinate employees, the industry in which the respondents work has a significant impact on the effectiveness of this managerial function.

Independent (grouping) variable: size of organisation.

The results of the Kruskal-Wallis test (p = 0), at the accepted level of significance (α = 0.05), indicate rejecting the verified null hypothesis.

It turns out that the size of the organisation/enterprise differentiates in a statistically significant way the answers related to such a dependent variable - the possibility to better explain new knowledge to other employees when performing remote work. Thus, the mode of work (remote, stationary, hybrid) should be adapted to the size of the organisation or enterprise.

Independent (grouping) variable: size of organisation.

The results of the Kruskal-Wallis test (p = 0.0429), at the assumed level of significance (α = 0.05), indicate rejecting the verified null hypothesis.

In this case, the size of the organisation differentiated the indications relating to the dependent variable: works in favour of acquiring and documenting employee knowledge. Also in the case of considering introducing the remote working mode, the size of the institution should be taken into account.

Independent (grouping) variable: experience of working remotely.

The results of the Kruskal-Wallis test (p = 0.0002), at the assumed level of significance (α = 0.05), indicate rejecting the verified null hypothesis.

Another independent variable differentiating respondents’ indications is whether or not the studied employees have experience of remote working. The analyzed indications were related to the dependent variable: allows to easier locate people with the needed knowledge. It can be concluded that the experience of working remotely quite clearly influenced whether or not employees could more easily locate people possessing useful knowledge.

7. Conclusions

Basing on an analysis of research results - both the quantitative analysis and the Kruskal Wallis test - the following theoretical and practical conclusions can be drawn.

- Remote work has a significant impact on knowledge management in an organization, although this impact depends on several factors and is not the same in every type of organisation.
One of the variables that differentiate the answers of respondents is the industry. In manufacturing-focused industries, remote work had relatively little significance in terms of knowledge management. This is understandable as in the production management process remote work plays a lesser role in the transfer, acquisition, and clarification of knowledge.

Another variable to look at is the size of the organisation. The obtained research results do not allow for a clear indication of the direction of the relationship between the variables. However, the existence of such a relationship can be stated with certainty.

An example of this is the number of indications provided for the statement: works in favour of acquiring and documenting employee knowledge. It turns out that the size of the organisation does make some difference in this case. Arguably, remote working has a greater impact on knowledge management in larger organisations.

Similarly, in the case of explaining and transferring knowledge, remote working allows to better control the process in small enterprises than in large ones.

Employers should consider the variables indicated above when deciding between remote, stationary, and hybrid working modes.

References