Knowledge Management Challenges during COVID-19

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Abstract: The efficiency of organizational processes largely depends on the quality of Knowledge Management. In the crisis situation, caused by the Coronavirus, its significance is especially apparent. Our research sought to reveal what knowledge management problems have emerged, due to the spread of the Coronavirus and what difficulties need to be coped with, in organizations. During the research, in three small groups within an online workshop, a group of experts worked with the "Be-novative" program, which uses design thinking, to connect the innovation process with the power of gamification and crowdsourcing. Using the program, ideas were formulated through joined-up thinking, evaluated online and further developed. Out of the 141 problems/ideas raised, based on the community's evaluation, three complex solution possibilities were developed, which combine several ideas under comprehensive titles. The developed proposals were published on the website of the professional organization, thus, supporting the successful functioning of knowledge management programs.

Keywords: Be-novative; Covid-19; knowledge management; online

1   Introduction

We live among constantly changing factors; the tools and developments are ephemeral, becoming obsolete in months. The compulsion of constant renewal does not only affect large companies. The question is who can constantly create new ideas, technologies and present something new from time to time. The efficiency and effectiveness of organizational processes depend on the quality of knowledge management. In difficult times, such as, increased fluctuation, the departure of the aging labor force, recurring failures, crisis situations, etc., its significance is especially apparent [1].

The emergence and rapid spread of the new coronavirus turned the world upside down. Societies, economies, organizations, and individuals face the invisible enemy, seeking a way to solve hitherto unknown problems. Relying on formerly acquired knowledge, knowledge sharing and joined-up thinking can help with the

search [2] [3]. In recent weeks, many have experienced that professionals are facing new Knowledge Management (KM) difficulties. Every day, there are new questions on social media: How do you solve this now? Since many are affected by the topic, it is worth thinking over how the scattered existing knowledge can be enriched, what tools can reveal individual knowledge and turn it into a shared resource. What solutions are worth developing that can be used even after the crisis? Joined-up thinking was started by these thoughts. The research question is: What knowledge management problems have emerged due to the situation caused by the spread of the coronavirus, what difficulties need to be coped with in organizations? To answer the question, before the practical examination, the lessons of past crisis situations are briefly recalled, and the most important solutions of knowledge management that fit the present situation are highlighted.

2   Theoretical Overview

Humanity has lived through several crisis situations, including natural disasters, wars and various economic catastrophes. The crisis caused by the coronavirus – like any other crisis – requires comprehensive problem treatment. A stable state of the relatively predictable past could be enjoyed during decades. Knowledge acquisition and sharing were unhindered for those who considered it important and used its tools [4]. The present is chaos and disintegration that are uncontrolled and the future…? For its estimation, experience from the peaceful past can be used limitedly, so more creativity, joined-up thinking, and knowledge sharing are required to master the present chaos and then focus on the future. In the further part of the study, the organizational level is decisive in terms of thinking, stating that the operational framework of organizations is influenced by a higher level medium, the economic possibilities, and the social status of individual countries.

2.1.   Lessons from the Past

Crises are well-known in history. (The Global Economic crises starting in the USA in 1857 and 1919, 1873, the worst crisis in the 19th Century, the oil crises of the 1970s, and the savings and credit crisis of 1989, in 1929-33 Great Depression. In the "housing bubble" of 2007-2008, trading with risky loans and overconsumption caused a critical situation) [5]. What can organizations learn from these events? What possibilities do they have that can mean survival and long-term success of the organization after waning problems?

The most important task for the leaders of organizations is to outline the future of their organizations, which requires immediate decisions and reasonable resource distribution. The thinking of Henry Ford, a great personality of the above-mentioned historical crises, is still part of the university curriculum. As a result of

his actions during the Great Depression, he not only survived but left a successful company for his successors [6]. The other, though not global, crisis (still part of the curriculum in several countries) is the Shackleton model, an excellent example of managerial solutions used during the famous South Pole expedition [7]. Instead of continuing crisis situation successes, let the conclusion be summarized.

- Vision, goal formulation
- Resource alignment/distribution
- Selecting/retaining talented people
- Meaningful tasks for everyone
- Appreciation (material, physical, human)
- Cooperation
- Team Spirit
- Knowledge transfer, sharing
- Getting the best out of everyone
- Setting examples
- Supporting people, mentoring

In the next section, the lessons that can be used for knowledge management are reviewed.

2.2. Necessary Elements of KM

Knowledge Management (KM) has long been essential for businesses to harness organizational expertise to make informed decisions and achieve optimal efficiency. The pandemic has increased the importance of KM, and, as in many other areas of personal and professional life, the changes have also impacted the practice of knowledge management [8].

Knowledge is a strategic resource that helps decision-makers manage the pandemic and mitigate its health and socio-economic impacts. Unlike other disasters, pandemics have a long lead time. Despite the dominant role of knowledge management in pandemics, the literature on the subject is scarce, with only health journals addressing it and knowledge management scholars being only tangentially concerned with it [9].

Looking at the key lessons, most of them can serve as a roadmap today. The factors that serve the success of companies and the development of order over chaos are in line with the characteristics and applied tools of knowledge management. Setting goals, hiring talented people, and leveraging and sharing their knowledge, as well as collaboration, team spirit, and mentoring are all features of the KM system. It is reasonable to assume that the development of a

knowledge management system is a criterion of organizational functioning that is key for the development of a successful future [10].

Before the emergence of COVID-19, very few organizations used knowledge management tools well. KM is indeed not easy; it can be costly, it requires a commitment that many organizations lack the capacity to make, and the payback often takes longer than expected. Although organizational knowledge is needed even more in this crisis than ever [11].

The outbreak of the COVID-19 pandemic and the resulting social distancing requirements have led to significant disruptions in the world of work. The results of the constrained and extensive practice of working from home are still largely unexplored. The increase in physical distances has emphasized the links between people. Information flow increasingly relies on digital tools and virtual experiences to communicate and to maintain the work done. This situation highlights opportunities that have not been considered so far. The online application of innovative KM solutions, collaborative programs opens up new opportunities [12]. The former face-to-face solutions are replaced by virtual space. Although the new solutions do not require physical presence, programs have been created that support the generation and further development of common ideas by providing conditions of virtuality. Although it is not personally possible to collect, evaluate and reflect on the generated knowledge and new ideas, with the virtual tools of 'gaming' solutions better results can be achieved in a time-saving way. [13] [14].

Choosing from the models that can be applied in practice, it is now worth focusing on what can ensure the collection, further development of scattered (often individual) knowledge, and its transformation into a common resource [15-18]. Although a number of studies have previously addressed tools to support knowledge sharing in virtual organizations [19] this situation calls for further solutions. The study reports on one of the methodologies tested in practice. The next section presents the logic of applying the method and the results of the practical research.

3   New, Innovative Methodology

The authors wanted to gather challenges and difficulties of KM to answer the research questions. To do so, a globally innovative domestic application (with numerous international awards) was used [20]. Be-novative is a cloud-based SaaS that exploits individual and collective creativity to help employees in a given company – even looser communities of up to several thousand people, – formulate their ideas through joined-up thinking, evaluate and further develop them together. It uses design thinking to connect the innovation process with the power of

gamification and crowdsourcing. The Be-novative program provides an opportunity for participants to develop their companies and support innovation processes by implementing ripe innovations [20].

The Be-novative program overcomes temporal and spatial limitations and will be an excellent opportunity for the organization to gather the best ideas and knowledge. The innovative knowledge-sharing web interface quickly provides useful results even for many participants. The participants share their ideas and development suggestions in a 25 to 30-minute creative "game", then evaluate them to find new ways to develop products, organizations, companies, knowledge. With a virtual brainstorming session, the participants can find solutions to global or even to everyday problems, using the power of creativity and community [20]. Figure 1 shows a sketch of the workflow.
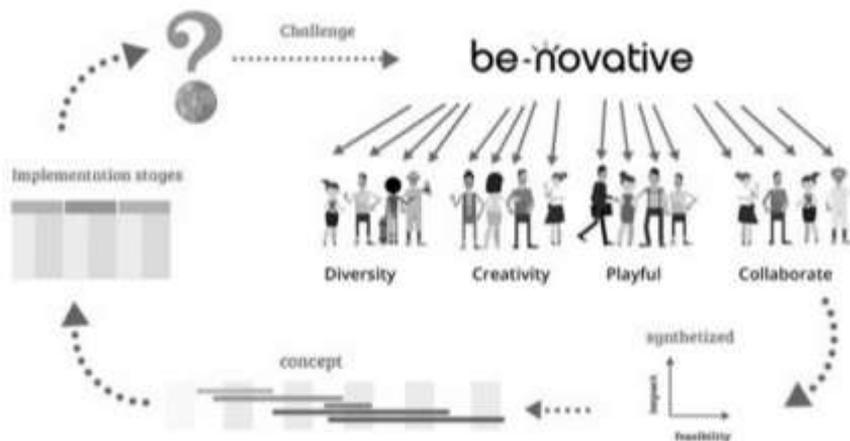

Figure 1
Workflow outline of the Be-novative program (www.be-novative.com)

In order to follow the logic, the screen views are presented via an example 'challenge', (since the research was not deducted in English, its actual screen views cannot be presented). The detailed description of our own research takes place in the Results section. The web application covers a creative process: first, various topics and issues are on the opening interface. Users can select an interesting topic or generate their own problem. In the screen view, the sample example is indicated by a solid line, and the own topic (What difficulties and opportunities have arisen in knowledge management in connection with the virus situation?) by a dashed line (Figure 2).
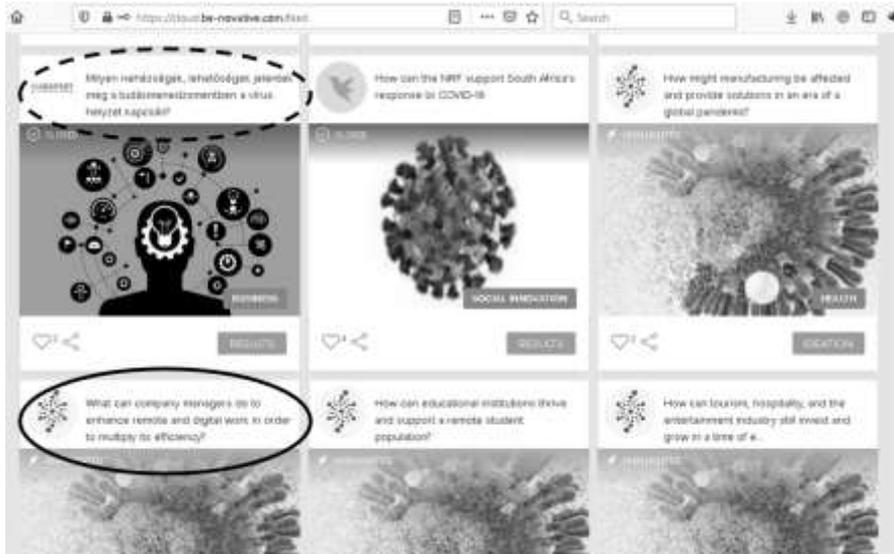
Figure 2
Selecting/generating a 'challenge'/topic (www.be-novative.com)

By entering a 'challenge', users can share their ideas about a given problem in virtual notepads, or get inspired by others' thoughts. The program allows the users to insert images, and random words and questions appear on the screen to support the birth of completely new, breakthrough ideas, and this increases ingenuity (Figure 3).

Figure 3
Virtual notepad (www.be-novative.com)

Anonymous brainstorming lasts for fifteen minutes, and then participants evaluate suggestions in ten minutes, without knowing which idea belongs to whom (Fig. 4).
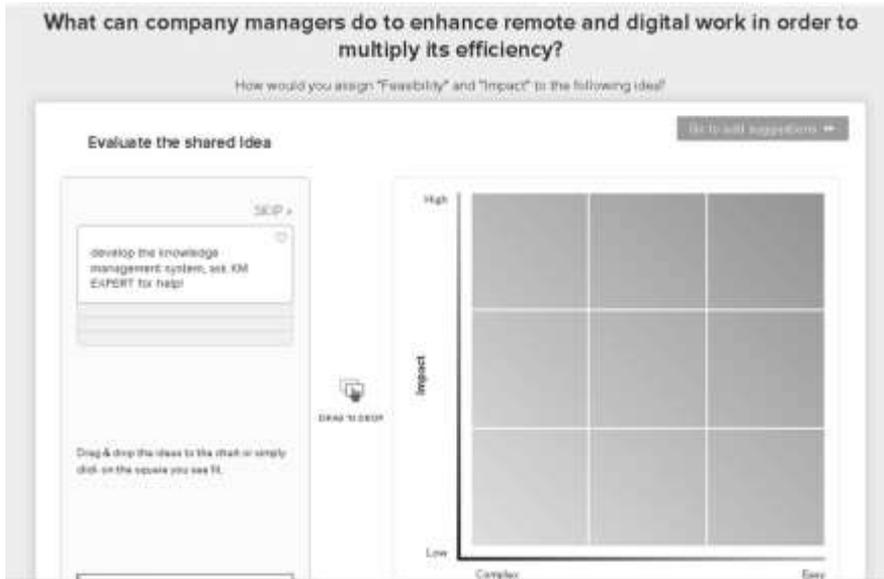

Figure 4
Evaluation of ideas (www.be-novative.com)

The results are averaged and arranged in a graph by the computer to show what solutions have been made for the problem (Figure 5).

Figure 5
Solution proposals (www.be-novative.com)

Then, it is possible to further develop individual ideas and formulate more detailed proposals. (Figure 6)
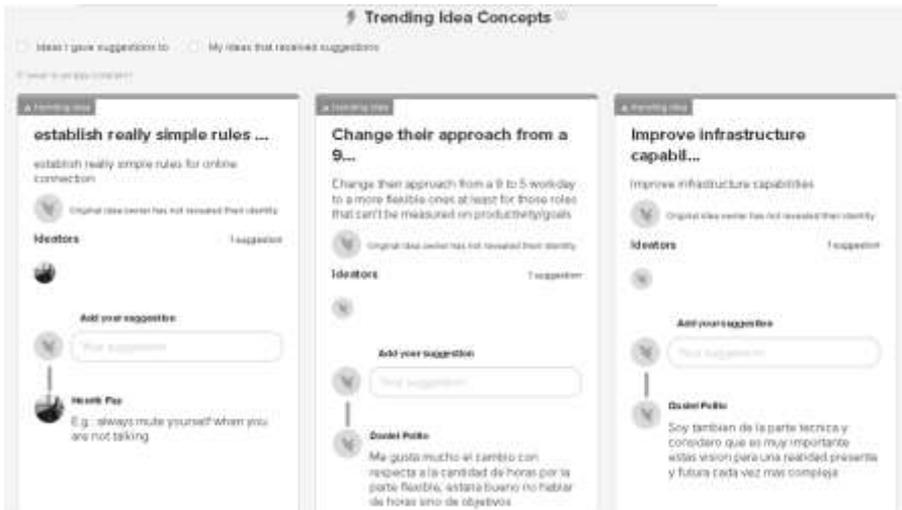

Figure 6

Further development of proposals (www.be-novative.com)

Participants can 'like' the gathered ideas, then the results summarized by the program can be queried according to various aspects (Figure 7). The owners of the ideas to be implemented can reveal themselves at the end of the process. Figure 8 presents the statistical results summarized by the software.

Figure 7

Ranking of ideas (www.be-novative.com)
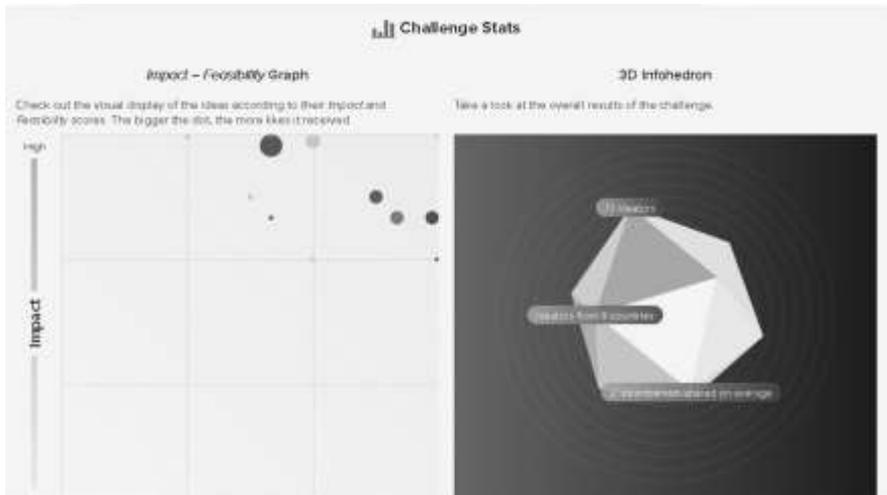
Figure 8
Statistical results of ideas (www.be-novative.com)

The brainstorming session is time-bound at a time, but within a given interval (a freely chosen daily or weekly time frame), anyone, anytime, anywhere can, users do not have to be online at the same time. As long as the interface is open, additional ideas can be entered, or existing ones evaluated, further developed, with helpful suggestions for the work. This is especially beneficial for multinational companies, given the time lag between continents. As Figure 9 shows, employees can join from multiple parts of the world.

Figure 9
The geographical location of participants (www.be-novative.com)

By exporting the results to an Excel spreadsheet, a list is created that contains all the parameters and participants of the process. Sorting by the order of importance and thematic grouping of the proposals provides an opportunity to review, further weight, and then elaborate the implementation project in detail.

The 'challenge' interface is closed at the decision of the initiator upon completion or at a later date, and the summarized results can be viewed on the Be-novative interface. After running the program, on returning the initial interface, Figure 10 below is shown.
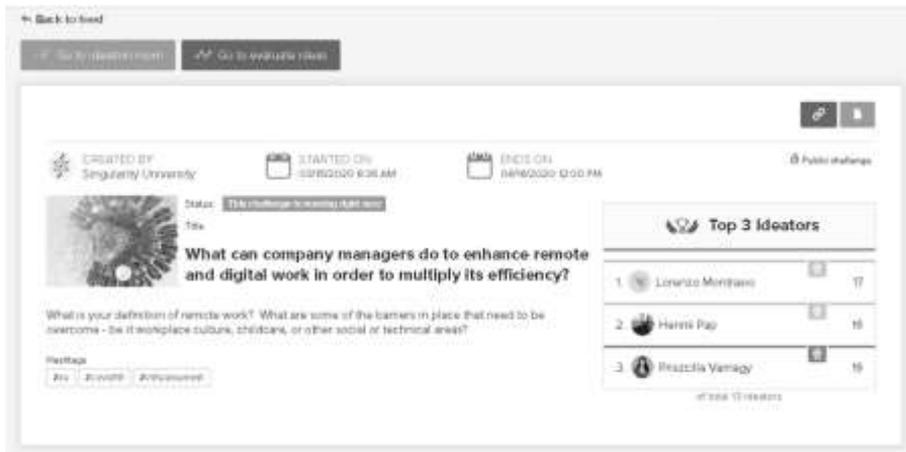

Figure 10
Closed 'challenge' (www.be-novative.com)

Based on the above logic, our program was launched with the original research questions in mind.

4   Sample and Method

The research was initiated by a domestic KM organization. The opportunity was announced on the community's website and newsletter, then the participants were randomly selected, based on registration. 25 people participated in the research (academic community representatives, entrepreneurs, project members, HR experts, business consultants, trainers). The research used two web interfaces in parallel, the Zoom room and the Be-novative program. At the announced time, participants entered the Zoom room. The head of the organization moderated the program here (goal formulation, program manual description, further information). The research process and criteria are presented in Table 1 below.

Table 1
The research logic

Research steps	Characteristics	Other
Announcement of the program	expert community website, newsletter	2 weeks before the program, KMEXPERT
Registration of participants	expert community website	KMEXPERT
Participant selection (sample)	randomly	25 persons
Participants' qualifications	representatives of the academic community, entrepreneurs, project members, HR professionals, business consultants, trainers	
The methodology used	Zoom room, be-novative program	In parallel
Moderator	Professional leader	Formulation of objectives, description of the use of the program, further information, conducting
Launching and running the program	Access to the Zoom room, registration on the be-novative platform	In parallel

The research question 'challenge' formulated to launch the program, which participants entered on the Be-novative interface, was: 'What knowledge management problems have emerged due to the situation caused by the spread of the coronavirus, what difficulties need to be coped with in organizations?' In the Zoom room, after the kick-off meeting, 3 small groups continued the joined-up thinking, according to the Be-novative logic. (Participants could choose to participate in a small group according to their interests, depending on which sub-topic they wanted to think about, to deepen the topic.) The sub-topics were:

What forms of direct (online) knowledge sharing should be developed that can be maintained even after the virus crisis? (The employees should receive answers to theirs as soon as possible, their sudden ideas should not be lost, and the lessons learned during work should be incorporated into the organization's knowledge assets.)

What online platform can be well applied to which knowledge management function? (Gathering online platforms that can help to solve the present situation and make knowledge management process steps more efficient in the long run.)

How to improve the on-boarding process of new entrants so that its elements can be used even after the crisis? (New employees entering the organization may start integration from home. How to adapt to the situation, what tools and methods are applicable that are useful in the long run?)

5   Results

The 3 sub-topics were developed in separate Zoom rooms, according to the participants' choice. (They could join the development of the topics based on their interest, see the number of evaluators in Table 2). The number of new ideas for each theme is also shown in Table 2. The above sample example shows that the program uses the Impact-Feasibility Graph (Figure 8; 11) to evaluate the votes of the participants (sorted by their importance), the results of which are also summarized in Table 2.

Following the 3 sub-topics, based on the above logic, 141 ideas were born. For the sub-topics, the program clarified the most important ideas (along with the scores given by the participants (Figure 7)), to which additional ones could be added to develop final solutions (Figure 6). Due to length constraints, only the first 3 ideas are listed in each sub-topic (Table 2).

Table 2

Sub-topic ideas and their evaluation scores (own construction)

Subtopic question	Ideas	Number of Evaluators	Number of new ideas	Evaluation scores
1.	Immediate access to important information from outside the corporate network	11	56	10
	Publication of professional guides	11	56	9.67
	Recording the date of regular meetings	11	56	9.56
2.	Can be used to store clouds, data	5	32	10
	Wunderlist, To-dos – task sharing	5	32	9.35
	Google Drive: editable table, opinions of many participants, easy to gather	5	32	9.35
3.	Development of an interactive E-learning interface that measures the value of progress and provides opportunities for feedback and questions	9	53	8.19
	Creating instructional videos	9	53	8
	Publishing company presentation materials	9	53	8

Based on the evaluation scores and the matrices generated by the program (effect vs. feasibility), the participants considered the first sub-topic worthy of further elaboration. The evaluation matrix generated by the program is shown in the figure below (Figure 11).
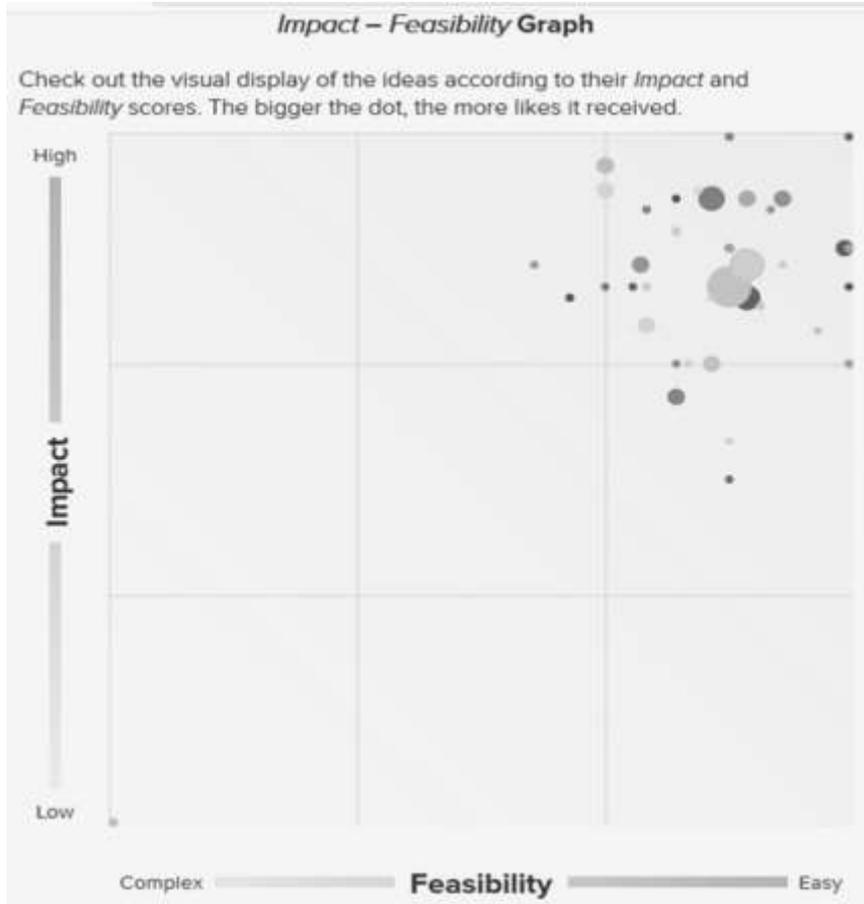

Figure 11
Evaluation matrix of the first sub-topic (www.be-novative.com)

Three of the 56 ideas in the first subtopic served as the basis for further joint work. (If necessary, more or fewer ideas can be elaborated on the decision of the organization's leadership. In this case, the number and content of ideas worth further elaboration were determined according to the joint decision of the professional circle.) The result provided by the program, which contained the grouped ideas, helped with the choice. Not only the overall score was decisive, but also the ideas rated by the participants as the most popular and most influential.

The possibility of combination and further elaboration on a common basis was also considered. Thus, of the 3 topics proposed for elaboration by the professional community (of the first 3 ideas, based on the evaluation), two were merged (entitled Knowledge transfer (online) and recording), the next topic renamed but keeping its original content (Scheduling online knowledge transfer), and an additional topic, considered important was included (Informal virtual meetings). During the discussion and further elaboration of the topics, several of the previous ideas were also included. Participants placed more emphasis on personal experiences, and, based on these, thought together about solutions for direct (online) knowledge exchange. In the form of voluntary commitment, in 2-3 minute phases, the participants presented the importance and the possibility of implementation of the ideas they proposed to be included. The topics processed in this way developed in a direction of more concrete, factual tasks during the joint discussion and conciliation. They progressed in a tunnel-like way in processing the topic, from the organizing principles to the implementation. In the following, the final proposed actions are briefly presented, giving an answer to the research question.

6   Discussion

Although there is a regulation in most organizations that prescribes the methodology of knowledge recording, in many cases, it is not up-to-date or clearly usable. Thus, accessing the necessary knowledge causes many problems. It is now possible (also in home-office) for employees to elaborate and keep up-to-date documents in their field, which can be accessed both internally and externally. The latter option is especially important for organizations that use closed internal systems, which until now could only be accessed from the organization's internal network [21-23].

2.3.   Knowledge Transfer (Online) and Recording

Developing available and accessible knowledge repositories and ensuring their day-to-day use are only a part of the knowledge transfer practice. In the course of personal contacts, many quick questions, telephones, and emails in the workplace provide the ad hoc necessary information, which is currently difficult in the form of a home office. The main problems are the sharing of tacit knowledge and the lack of informal knowledge sharing that goes on as a part of unnoticed everyday practice. In the course of personal contacts, these knowledge-sharing solutions are embedded in the processes and they become a natural part of everyday work, which is not or very difficult to implement in the home-office format [24-26].

Given that the need for home-office (or at least, mixed/combined) working will remain after the pandemic situation has subsided, the forms and methods of knowledge transfer in the everyday practice of organizations need to be rethought and adapted to the changed needs.

2.4.   Scheduling Online Knowledge Transfer

In order for employees to have daily, operative knowledge, daily, weekly meetings are essential. The timing and duration of these should be chosen so that further work is least disrupted. Although this idea seems to be evident, it turned out to be a serious problem in the first period of the arrangement of home office work (and its form is still undeveloped in many places) [27] [28]. Managers or staff would contact each other at all sorts of times, either with a problem, a question, or a report. These random, unscheduled online calls, emails, consultations interfere with focused thinking, continuous work, and concentration. This has been addressed and resolved in several places recently but, as the opinion of the expert community has shown, there are still many problematic cases of unplanned time management. The power of informal knowledge transfer, in addition to the formal, to sustain the community has been raised in several debates [28]. Therefore, the possibility of informal meetings was brought to focus as sub-topic 3.

2.5.   Informal Virtual Meetings

Informal meetings, organized either in a regulated or an ad hoc manner, provide further possibilities for knowledge and information sharing. Just as personal coffee or beer together, informal meetings online serve the same aim. These virtual meetings, even in a "ceremonial" form, represent a serious cohesive force, culture formation, and knowledge transfer. Table 2 below summarizes the most important and easiest-to-apply options of the three sub-topics processed.

Table 2
Possibilities for solving subtopics (own construction)

Sub-topics	Possible solutions	Implementation needs	Future sustainability
1.	Process description, brief instructions, Q&A, briefings for new employees, responses to non-routine critical situations, answers to non-professional questions, online education, virtual coaching, mentoring, internal wiki, do's and don'ts, videos	Access to knowledge repositories through external communication, video, audio recording and transcription, recording of what is heard by the receiving party, managerial decision, and technical conditions	x

Sub-topics	Possible solutions	Implementation needs	Future sustainability
2.	"Stand up" morning start, starter 5-minute briefing, "One point lesson" in 10 minutes, "chunk of knowledge multiplier", gamification, "Virtual postcard method" modeled on "Share desk", "Teams", "Slack"	Setting the starting time and duration, facilitator, Provision of technical conditions and preparedness (education)	x
3.	virtual beer, random couple coffee, group chat (video chat, messenger, skype)	Attitude, openness, trust, provision of technical conditions	x Upgrade-able

Conclusions?

The last two years have changed the ways of thinking of and practicing knowledge management, and have raised its importance. Reviewing the previous months, valuable knowledge resources could be identified. The increase in digital content types, Zoom/Teams, and other forms of meetings, presentations and chat channel discussions has led knowledge management practitioners to find new ways of capturing and sharing this content so that it is easily accessible when needed. However, care must be taken not to overplay the potential of digitalization. Organizations must be able to maintain a reasonable level in terms of both the use of tools and the information they accumulate. It should be mentioned that the use and exploitation of organizational memory have also become important. In this context, the importance of organizational culture has also increased, which is crucial for the acceptance of knowledge management within the organization and for its structural and strategic positioning [23].

In recent months, it has become clear that a system of organizations with adequate knowledge existed well before the pandemic. These organizations were able to adapt relatively more quickly to the new digital working style compared to those that did not have a well-developed knowledge management system or the elements of it did not function (knowledge acquisition, sharing, storage, etc.). The pandemic has also accelerated the recognition in society of the significance of knowledge-sharing systems and the styles and importance of teleworking. In this context, the importance of trust in the virtual space has been enhanced. Several organizations have implemented coordinated techniques, which, in the future, will mean greater transparency in knowledge sharing. The future of organizations will continue to be cost-sensitive. According to Harold Koontz [29] bridging all areas of knowledge, linking relationships inside and outside the organization will be significant in the near future. Knowledge management and learning will take place online and virtually. This will require establishing an efficient knowledge center with artificial intelligence capabilities. After all, the pandemic has highlighted the importance of knowledge management worldwide.

The solution options listed in Table 3, in response to the raised problems, provide an opportunity to develop sustainable solutions in the future. The expert community continued to work in detail on the implementation options for the ideas raised, which are available on the professional organization's website [30]. Why have these solutions not been used so far? Often crisis situations bring out special problems and simple, cheap, and reasonable solutions. The balanced operation of the past has not forced professionals to recognize and deal with these solutions. PwC's research of 2019 [31] proved that leaders with crisis experience consider similar measures to be essential to underpin future success to the lessons listed at the beginning of this study. With the help of the Be-novative program, any organization can try and experience the power of joined-up thinking and crowdsourcing, the benefits of playfulness, time-saving solutions, and the possibility to overcome distances. The aim of this study is not to present scientific novelties that have not been announced so far but to present the application of a novel method, which (although it can be applied in any field of organizational life) tried to identify the difficulties of knowledge transfer and sharing in the field of knowledge management, which is a cardinal problem in every organizational operation, and to provide a contribution to their solution. Although the study does not go into the theoretical issues of knowledge management in any greater depth, it does offer a solution to the difficulties of its application by extending the possible methodology. Once the pandemic situation has subsided, the requirements of employees and new types of working conditions will certainly force organizations to rethink and reorganize their operating mechanisms, including the process and tools of knowledge management. This is supported by the method presented in the study and the results of the research.

The research topic is limited by the relatively small number of experts and the rapidly changing environmental conditions. In the future, it would be worth using the method described herein, to address similar questions and to compare the results longitudinally.

Acknowledgment

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