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# KNOWLEDGE MANAGEMENT IN PRODUCTION LOGISTICS REORGANISATION PROCESSES

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**Purpose:** the purpose of this paper is to understand how newly emerging knowledge is managed in companies undergoing reorganisation within the scope of production logistics. Four elements of the knowledge management process are examined and an attempt is made to diagnose the place and nature of the problems that occur in this process.
**Design/methodology/approach:** the study used a qualitative method. In-depth interviews were conducted in 5 companies with 13 middle and senior managers who were involved in reorganisation processes. The study spanned the period from January to June 2024.
**Findings:** the study shows that the least effective stage is the distribution (transfer) of knowledge to production employees. The biggest problem is the internalisation of knowledge at the lowest levels by employees at individual workstations.
**Research limitations/implications:** the study was conducted among small and medium-sized enterprises and therefore does not take into account the perspective of large companies. It also only addresses knowledge management in the context of production logistics reorganisation and therefore does not focus on other types of reorganisation.
**Practical implications:** understanding the essence of knowledge management is the basis of a successful reorganisation process. Knowledge of its phases and awareness of the shortcomings in the process in small and medium-sized enterprises make it possible to carry it out in a more organised and sustainable way.
**Social implications:** the study may contribute to an increased awareness of reorganisation processes in enterprises and thus to their effectiveness and efficiency. This is then likely to improve the competitiveness of enterprises.
**Originality/value:** this study is part of the trend in the research on knowledge management. Its uniqueness consists in presenting knowledge management in the specific conditions created by the reorganisation process in the area of production logistics. In doing so, it is enriched by a diagnosis of the source of possible failures and an evaluation of the process by the people responsible for the initiation and execution of the process.
**Keywords:** knowledge management, reorganisation, production logistics.
**Category of the paper:** research paper.

## 1. Introduction

It is clear to modern businesses that in order to remain competitive in the marketplace, it is necessary to constantly adapt to the conditions of the changing environment. Change for a company can be of various nature and scope. For manufacturing companies, changes in the area of production are extremely important, if not crucial. These, too, may concern various areas and range from technological changes to organisational changes in the area of production logistics, changes in personnel, may involve individual operations, processes or entire production lines. All methods of production organisation and management improve existing production systems or enable the design and implementation of new systems in which production factors should reach the right level.

Regardless of the nature or extent of the changes within production, new knowledge is created as a result of the changes taking place within the company and this knowledge must be managed appropriately. This is because only its appropriate transfer will ensure the effectiveness of the reorganisation process. Knowledge needs to be properly consolidated, shared and protected. The right people in the company must become acquainted with it and then be able to use it. Only in this way can the reorganisation process succeed.

In this article, the authors attempt to analyse and evaluate knowledge management in companies that have undergone process reorganisations in the area of production logistics. Barriers that have prevented, in some cases, an effective knowledge transfer and thus a fully successful reorganisation will also be shown.

## 2. Knowledge management

Today, knowledge is recognised as a fundamental potential in the modern economy and is treated as a source of economic success or failure (Kłak, 2010). Knowledge is recognised as the main wealth of an organisation and its key resource, which has not been challenged in the literature for a long time (Drucker, 1996; Stankiewicz, 2006; Koźminski, 2005).

In management science, the concept of knowledge management is not at all new. It has also been interpreted in various ways. Earlier, different terms were used to describe this phenomenon. It was dealt with by theoreticians of strategic management, specialists in innovation and technology management, researchers in the area of people management and computer scientists. Knowledge management has also received a number of definitions, formulated by consultancies and management theorists, emphasising many different aspects. One group of definitions emphasises an organisation's customers and employees and its market performance. From these definitions it can be concluded that knowledge management is the

process that an enterprise uses to gather, organise, share and analyse its knowledge in a way which is easily accessible to employees. This knowledge can include technical resources, frequently asked questions, training documents and other information.

Knowledge management (KM) is a multidisciplinary field that involves the creation, storage, retrieval, and dissemination of knowledge within organizations to improve performance and competitiveness (Gupta, Iyer, Aronson, 2000). It encompasses both technological tools and organizational routines (Petrovic-Randelovic, Stankovic, 2005) and is crucial in today's knowledge economy (Dalkir, 2005). KM practices aim to generate value from intellectual assets, support decision-making, and foster innovation (Darow et al., 2020; Jauhari, Pratihar, 2010). Effective KM systems can access information from multiple sources, centralize it, and continuously improve it for ongoing use (Chitra, 2016). KM is not a management ”fad” but a broad, multi-dimensional approach covering most aspects of an enterprise's activities (Wiig, 1997). Successful implementation of KM requires a shift in organizational culture and commitment at all levels to harness knowledge for competitive advantage and innovation (Gupta et al., 2000).

In an enterprise, knowledge is inextricably linked to employees, and its use depends on the organisational culture in which appropriate employee motivation is integrated (Nycz, Owoc, 2006). The literature widely holds the view that the transfer of knowledge resources in an enterprise is influenced by a number of factors. Of these, very important is the organisational climate conducive to knowledge transfer, understood as the role of the organisation and the organisational environment. The key characteristics of an organisational climate conducive to effective knowledge transfer include: a sense of security, clear goals, focus on taking action, support for innovation, freedom (autonomy), challenges, sufficient resources, support from superiors and colleagues, trust and openness, opportunities for debate, etc. (Michalak, Zagórowski, 2017). These issues are numerous, and some researchers divide them into groups, distinguishing, for example, those related to employees, the company and knowledge transfer methods (Paliszkiewicz, 2007). It is also noted that knowledge transfer should be carried out selectively, as not everyone needs specific knowledge at a particular time and place (Krogh, Nonaka, Aben, 2001).

A company's knowledge is shared and distributed among all employees and different groups, but to become productive, it must first be properly coordinated. In the modern enterprise, there is a need for an appropriate knowledge management system, which is defined as a complex mixture of understanding and practice, expressed and tacit knowledge, physical and social technologies (Kłak, 2010). The knowledge management system must take into account different types of knowledge. The distinction between tacit and explicit knowledge is probably the most fundamental concept in knowledge management. Such a distinction was first introduced by Michael Polyani in the 1960s, but is one of the main points of Nonaka and Takeuchi's book The Knowledge-Creating Company (1995). In the book, the authors define tacit knowledge as knowledge embedded in the human mind through experience and work,

know-how and learning embedded in people's minds, and personal wisdom and experience that is context-specific and more difficult to extract and codify. Tacit knowledge includes insights and intuition. Explicit knowledge, on the other hand, is knowledge codified and digitised in books, documents, reports, notes, etc., documented information that can facilitate action. Explicit knowledge is knowledge that can be easily identified, expressed, shared and used. (Nonaka, Takeuchi, 1995; Howelles, 1996). There are two strategies in knowledge management: personalisation and codification. The codification strategy involves recording knowledge in documents, creating organisational knowledge bases and using information systems for management. The personalisation strategy involves focusing on communication and collaboration with experts, which stimulates the transfer of tacit knowledge (Jemielniak, Koźmiński, 2012).

The theory of knowledge management identifies knowledge management processes. Their identification allows a company to systematically transform information, knowledge, skills and competences into intellectual capital. The knowledge management process includes four components: knowledge creation, consolidation, dissemination and protection (Heijst et al., 1998). Knowledge creation is a process carried out through the learning of individuals, including the acquisition of experience, interpersonal communication and group learning. Knowledge consolidation should be understood as the process of collecting and codifying existing knowledge, the aim of which is to bring together knowledge from different sources in a central repository, so that it forms a complete and coherent picture of a given issue. Dissemination of knowledge is very important as its purpose is to ensure that employees have access to the accumulated knowledge, i.e. using the fruits of knowledge codification strategies. The final element is knowledge protection, which aims to safeguard the accumulated knowledge resources against loss or unauthorised use (Kłak, 2010). The steps in the knowledge management process formulated in this way have seen various modifications and developments and are often listed as a lessons-learned concept. However, no matter how many steps are distinguished here and what they are called, it is important for a company to go through them all. This is because only a holistic approach to knowledge management, which is comprehensive and attaches importance to all steps, is able to ensure that ‘lessons are learned’ and that the company actually benefits from them. An example of a situation where this is necessary is the reorganisation of processes in the area of production logistics in a company.

## 3. Reorganisation of production processes and knowledge management

One of the moments when new knowledge is created in a company are production reorganisation processes. It is emphasised in the literature that today the functioning of enterprises on the market means continuous improvement both on the production level and in

the aspect of management, and reorganisation or change is now a common and inevitable phenomenon. (Kulińska, Rut, 2015). Production processes, due to the use of advanced technologies and logistics solutions, are today a set of interdependent activities, affecting efficiency, which, according to management theory, is the result of actions taken described by the relation of the obtained effects. (Jucha, Nowacki, 2016) Knowledge management can improve production management and increase a company's competitiveness in the manufacturing industry (Berawi, Woodhead, 2005; Chaithanpaat et al., 2022; Rezaei et al., 2021).

Process reorganisation is not an easy task, as it forces the whole process to be looked at from different angles, from every possible point of view. This results in a constant search for new solutions to achieve the desired result. The most important thing in all of this is outlining the goal, carrying out the actions and activities that will ultimately contribute to success (Topolska, 2017).

Change, therefore, is inevitable and happens all the time. They happen according to different concepts and in different industries. Well-known concepts include those such as radical re-engineering or Lean, for example. They may involve automation or robotisation (Grabowska, 2017), but their main aim is to eliminate waste. Production logistics deserves special attention in reorganisation processes. This is because it is manufacturing that engages the largest part of a manufacturing company's resources while at the same time being a profit-making process (Michlowicz et al., 2015). Hence, it is important that knowledge of the changes taking place in this area permeates the enterprise and is effectively implemented by it.

The literature provides some guidance on the scope and means of integrating knowledge into production management. Muniz et al. propose a model of production management that integrates knowledge management, as a third dimension, to the production and work dimensions and to identify factors that promote a favourable context for knowledge sharing and results achievement in the production operations shop floor environment (Muniz et al., 2010). Bitkowska has investigated the motives of manufacturing companies implementing knowledge management, among which she lists competitive position improvement, better cooperation with customers, staff development and the income and profits growth. (Bitkowska, 2017). Brajer-Marczak examines knowledge management in companies in the context of process management. According to her, the critical element for the distribution of knowledge is the existence of relevant communication channels as well as access to joint databases. The lack of information or hindered access to information may be a serious barrier in solving emerging problems, and sometimes even block process improvement initiatives (Brajer-Marczak, 2016) On the other hand, according to a study conducted in Malaysia, among all knowledge management elements, only knowledge acquisition and knowledge utilisation were still relevant to organisational business performance nowadays, whereas knowledge sharing was perceived to be less important (Loke et al., 2020). Dombrowski et al. studied lean management implementation processes and showed that people's knowledge must undergo the

most fundamental shift in order for the changes to be long-lasting. The majority of implementation methods outline the steps that must be taken in the correct order, but they do not address how knowledge is integrated throughout the company. As such, an analysis of the characterisations of knowledge and knowledge flows is required (Dombrowski et al., 2012). In contrast, a report shows that companies find it difficult to capture and make use of knowledge from external partners (The Economist Intelligence Unit, 2007). Recent studies investigate the association between Knowledge-Management Infrastructure Capability (KMIC), Employee Resilience, Function-al-Flexibility (FF), and Innovative Work-Behavior (IWB) in the workplace (Nassani et al., 2024).

Research on the distribution of knowledge in companies is a topical subject, since it is, among other things, knowledge management that determines a company's competitiveness. It is therefore important to study companies from this angle and ask questions about how knowledge is transferred and make recommendations.

## 4. Research hypotheses and methodology

The aim of the study was to obtain an answer to the question of how, in the surveyed enterprises, new knowledge, acquired during the production reorganisation process, is integrated into existing know-how and the existing knowledge management system. This study included 5 enterprises from, among others, the clothing, construction and waste processing (recycling) industries, classified as small and medium-sized enterprises, in which production logistics reorganisation processes had recently been carried out.

Interviews were conducted with 13 middle-level and senior managers. Some of the respondents in managerial roles were also company owners. The companies chosen for the study were those that were friends of the authors willing to take part in the study and to which the authors had access. The research sample obtained in this way is called a convenience sample (Glinka, Czakon, 2021; Edgar, Manz, 2017; Galloway, 2005) In two cases, the authors of the study went to the companies, where, according to the method described in the literature, which consists of the researchers - and in this case a consultant - in order to build trust and, above all, to understand the processes and the problem, they go to the location, i.e. to the production halls, the company's headquarters, etc. This allows the consultant to see what technology is being used in the company, what kind of people the team is made up of, what kind of relationships exist within the team and what kind of organisational culture prevails in the company (Jemielniak, Kozminski, 2012).

An individual in-depth interview technique was used, conducted by means of a face-to-face interview; these were partially standardised interviews. The responses were noted down, as the respondents did not agree to be recorded. Some of the responses, considered most

representative, are quoted in this study in brackets. In some cases, the interviewees provided company documentation. The choice of this method was dictated by the purpose of the study: the aim was not only to stick to standardised answers, but also to comment on knowledge management to shed light on its context and draw conclusions. The interviews followed a pre-prepared script, which did not include knowledge management terminology that might have been unfamiliar to the interviewees. The data obtained during the interviews was then anonymised and averaged. The answers to the questions asked were extracted from the texts and the data was aggregated. These were then used for interpretation and conclusions.

The analysis of the literature on the subject allowed the following three research hypotheses to be put forward:

h1. Of all four elements of the knowledge management process in production logistics reorganisation processes, knowledge transfer and application are the most difficult.

h2. Of the two existing strategies, the personalisation strategy dominates.

h3. The integration of new knowledge with existing resources in the production logistics reorganisation process is different if the reorganisation is carried out by a consulting firm and different if it is carried out by company staff.

## 5. Research results and discussion

### Knowledge management systems

In the companies surveyed, the predominant approach is based on a discretionary combination of codification and personalisation strategies. Knowledge is accumulated both in the form of knowledge bases comprising both hard copy and electronic documentation (codification strategy), but is also largely accumulated in the form of individual employee knowledge (personalisation strategy). Codified knowledge has a diffused character. While paper documentation is collected in a highly structured way, there are rooms and shelves assigned to specific binders, electronic documentation is copied and stored on individual employees' computers, which can cause some difficulties. Knowledge is mainly transferred by direct communication: during organisational meetings/conferences, by e-mail or by telephone. There are accounting documents (income and expense ledger, invoices and other expenditure documents, cash documents, fixed asset registers), technical and quality system documents, job instructions, personnel documents, customer cooperation documents (reports, correspondence with customers, offers, notes). Documents from a particular area can be accessed by the employees of the department concerned and by the management. In order to consult a particular document, it is generally necessary to contact a member of staff in the department concerned, who makes it available on request, either by accessing it from the

relevant hard copy repository or by referring to its electronic version (“We actually have all the documents in the computers, sometimes different people have the same document and sometimes we don't know which version was the final one”; “If I need something, I go to B. because she has it and she will always tell me. I know where it is and where the file is, but she has the most insight into it”).

A very important element of the knowledge base is the knowledge dispersed among employees-managers of a non-formalised nature, including tacit knowledge. These are all kinds of notes, scribblings made by employees for the purpose of day-to-day communication (conversations, meetings, negotiations) (‘For example, I have a notebook where I always write down what was said during a meeting. I'm always talking to clients and when we're negotiating, I always write down the figures here, e.g. quantities, prices, to pass it on, it's my notebook"). Direct communication via telephone and face-to-face conversations plays an important role - it is the most common way for employees to pass information to each other. None of the companies surveyed use ERP or CRM computer software. All respondents expressed satisfaction with this system, although reservations were made regarding questionable reliability of face-to-face communication (‘We mostly communicate directly, but if someone doesn't mention something, forgets something, there are problems’).

For production workers, most companies have traditional cork or magnetic boards on which current information is posted. Each production worker undergoes a training process when they are hired. In the majority, this is carried out by foremen. In addition, job instructions are available at the workstations in most of the companies surveyed. A high proportion of tacit knowledge, which employees use in production processes, is rather characteristic here. Managers emphasised that they simply know how to do their job because they have been doing it for many years (‘We just know how to do it, we've been doing it for over 20 years and I don't know how to explain it, we just know how it's supposed to be’).

The companies surveyed use very similar knowledge management strategies. They are aware that there is a whole set of tools to improve this system (e.g. computer systems), but there is a perception that with this scale of production it is not yet necessary to introduce computer systems ("I liked how we switched to the new post office, there are all sorts of other features, like a delivery calendar available to everyone, but I'm not sure it's necessary for us to have anything more complicated’). All respondents rate their companies' existing knowledge management systems as sufficient and satisfactory, while noting some shortcomings, for which, however, the human element is to be blamed ("We have a pretty good communication and workflow system, if something doesn't work sometimes, it's more the people who fail. No computer programme is going to make it better").

**Knowledge transfer in production reorganisation processes**

Changes were made to the organisation of production logistics in the companies surveyed. The main reasons came down to the need to improve product quality or product modifications. Each time, the stimulus for the reorganisation came directly from customers who lodged a complaint or made an enquiry about a modified product. Whatever the reason, the reorganisation required changes in the area of production logistics, e.g. changes to the sequence of processes, introduction of new control processes, reorganisation of workplaces, modification of the working methods at a given workplace, changes to the workforce, etc. Thus, new knowledge emerged in the area of production logistics, which had to be integrated into the existing system.

Ratings of the changes introduced in production logistics range from ‘minor’ to ‘quite major’ and ‘irrelevant’ or ‘unnecessary’ to ‘necessary’. Some managers actually initiated them and supported them wholeheartedly (‘It was a good thing because we had a bit of chaos here and as much as possible something had to be done about it’), while others expressed attitudes that were not favourable (‘Actually I don't know if it was necessary, in my opinion it was all right before’). Nevertheless, they all noted that the emergence of the very concept of change entailed the need for change and were aware that implementation steps had to be taken as the management requested.

The reorganisation in the surveyed companies was carried out in 2 cases by a consulting company, in other cases by the company's employees - middle-level managers, and in one of the companies the changes were directly supervised by the owner. This significantly determined the transfer of information and knowledge in the companies.

In the case of reorganisations carried out by consulting companies, documents - reports, containing a description of the actual state of affairs and recommendations - were produced in the surveyed companies. The task for the enterprises was to implement the recommendations and to subsequently control them.

In the case of reorganisations carried out by company managers, the managers themselves initiated the changes by verbally submitting their proposals to the management and having them approved or modified. They were also responsible for implementing them and controlling their implementation.

It was therefore the middle-level managers (production managers, quality-control managers) who were responsible for implementing the changes. The changes included - depending on the company:

- amending work instructions,
- reorganising workplaces and workstation teams,
- setting up communication routes,
- introducing additional quality controls,

- improving organisational and workflow measures in production halls and warehouses,
- introducing or modifying symbols and markings.

Production workers reacted differently to the changes, depending on who actually initiated the changes. In particular, they feared the changes being carried out by the consulting company, as the announcement of the reorganisation and the presence of people from outside the company, called ‘controllers’ or ‘auditors’, made them apprehensive about the termination of their employment contracts. Some production workers welcomed the proposed changes. Most understood the need for change.

The most difficult thing to assess is the effectiveness of the changes made. In the interviews conducted, managers found it difficult to separate their account of the implementation of the reorganisation from their subjective evaluation of it, which may not be surprising as they often evaluated the effectiveness of their own actions. Nevertheless, it can be concluded that the implementation of the reorganisation of production processes in the surveyed companies followed a certain model as illustrated in Fig. 1.

Above all, the companies were successful in transferring new knowledge into their existing knowledge bases. In the two companies that used external assistance, reorganisation documentation was integrated into the company documentation. The reports were not just ‘put away on a shelf’, but job instructions and procedure descriptions were modified or created altogether. Knowledge was codified and appropriate documentation was created. However, this knowledge was not internalised in individual production employees. A kind of sieve effect developed, or rather multiple mash sieves of a varying mesh size, through which knowledge passes from the top to the lowest level in the organisation. Employees know that a reorganisation has taken place, but it does happen at times that they do not follow the new instructions.

Production workers best absorbed the knowledge passed on to them by their immediate superiors and such knowledge, obtained through direct contact, they appeared to internalise best. For example, in one company, a change in the production process (additional quality control of the product on an additional piece of equipment at a certain stage of its manufacture) was recorded in the workstation manual located at the workstation and, in addition, the employees were informed of the new step. However, the instruction was in such a small font that it was not visible from where the stand was operated. And yet, the workers complied with the new instruction because they had been instructed what to do by their superiors.

New production expertise was not transferred in its entirety and, most importantly, the companies surveyed encountered difficulties in implementing it. The factors that caused these difficulties came from two directions: from the production staff - in the case of reorganisation carried out by the company's employees - and as early as the middle-level management. The reasons can be identified as unwillingness or inability to learn, lack of confidence, but also a desire to avoid risks (‘I think our people are a bit poorly motivated, I don't think they know the need, they don't have the drive’).

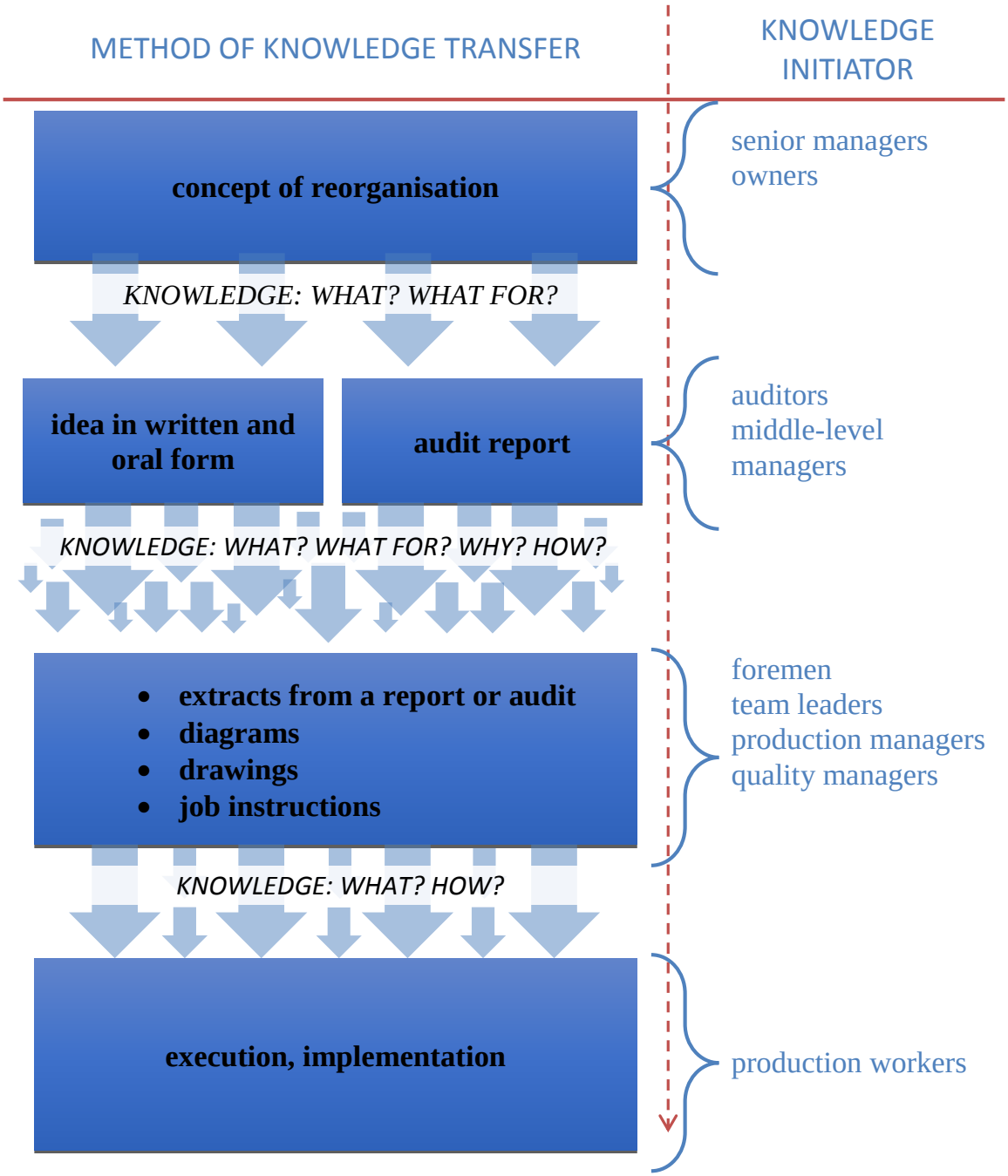


**Figure 1.** Diagram of the transfer of the knowledge management process in production logistics reorganisation processes.

Source: authors' own elaboration.

Another group of reasons is the obstacles arising from the organisation itself: too rigid organisational framework, unclear division of tasks and organisational structures, lack of flexibility and rigidity of thinking, attachment to old patterns of behaviour.

The new knowledge acquired by the surveyed companies was, as already mentioned, absorbed by them through codification and personalisation. The changes made to the documentation available to employees are those made available in the form of executed or

updated workstation manuals. The remaining knowledge was provided to employees in the form of one-off training sessions. None of the companies carried out a re-inspection in order to check that employees were following the new guidance. Thus, only from the accounts of the interviewees and based on their assessment can it be concluded whether the knowledge transfer was effective. Managers were overwhelmingly sceptical here in the interviews, frankly admitting that knowledge transfer is unsatisfactory. While new knowledge is available to employees, it is still not used by them. This indicates that companies perceive knowledge as something that is disconnected from practice. Where new recommendations and guidelines are applied in production, this is as a result of the training provided.

It is worth noting, however, that in one case the knowledge transfer was successful. This concerns the extension of a new production line in a recycling company. In this company, process and technology knowledge is protected by patents. In this case, the extension of the new line involved obtaining a new patent, which was an extremely strong motivation for the owner to take care of putting the patented expertise into practice. In this way, the launch of the new line became a priority, with the owner of the company personally overseeing the project.

The study presented here has some limitations. It could certainly be extended to include other types of enterprises and the changes made to them. Further on, such a study could include more enterprises, which would provide a basis for generalising the findings and abstracting more universal patterns or even a model. Further research could certainly ask questions about where the barriers to knowledge transfer in manufacturing enterprises come from and how they can be overcome.

## 6. Conclusions

The study confirmed all three hypotheses formulated in the introduction.

Of these four elements of the knowledge management process in production logistics reorganisation processes, knowledge transfer and application (h1) proved to be the most difficult. It seems that in order for the implementation of new knowledge to be successful, it is necessary to involve employees and motivate them appropriately. In the case where the owner was directly involved in the process, the transfer was successful, which can be explained by the full motivation and commitment of the owner resulting from his personality traits as well as his strong motivation to develop his own company. In other cases, care would have to be taken to ensure that employees were properly motivated. Perhaps this could be achieved using a system of bonuses or considering other incentive systems for employees.

The hypothesis that, of the two existing strategies, the personalisation strategy (h2) dominates was also positively verified. The companies under study used two learning scenarios mixing both strategies: personalisation and codification, but the personalisation strategy

prevailed. The culture of knowledge retention in companies is primarily based on employee knowledge and this is largely tacit knowledge. It is difficult for employees to share it, as they do not have any developed methods for sharing knowledge, they do it rather spontaneously and without a specific methodology. The same is true for transferred new knowledge: those responsible for implementation preferred to transfer knowledge directly, but this was not always done in a systematic and effective way.

It was also possible to verify the last hypothesis, according to which the integration of new knowledge with existing resources in the reorganisation process of production logistics proceeds differently if the reorganisation is carried out by a consulting company and differently if it is carried out by the company's employees (h3). Two of the surveyed companies implemented the reorganisation with the help of consulting companies. It was in these companies that knowledge transfer was less successful. The reasons for this are mainly that employees in companies where the reorganisation was carried out by managers appeared to be more motivated and more convinced by the process.

Knowledge transfer in companies undergoing reorganisation in the area of production logistics is a process consisting of four stages: creation, consolidation, dissemination and protection of knowledge and involves all employees: from owners or senior managers to production employees. The study shows that the least effective stage is the dissemination (transfer) of knowledge to the lowest levels, i.e. to production employees. Knowledge in enterprises is subject to codification and personalisation; in this respect, enterprises follow a mixed strategy. The biggest problem is precisely the internalisation of knowledge at the lowest levels by employees in individual workplaces. This would include the use of teaching strategies and methods used by middle-level managers as well as a training and verification system.

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