

**Knowledge sharing and how it's done:
Lessons learned from the 'Van Eijk Project'**

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Abstract

This article provides insight into the 'Van Eijk Project', a shared initiative to capture knowledge about the application and production of high-quality mechanical drive components and make that knowledge available for internal and external use. An overview of the motives, efforts, experienced barriers and outcomes of the project, juxtaposed against recent insights from the knowledge management literature, offers an example and serves to generate lessons learned for other SMEs that consider engaging in similar initiatives.

1. Introduction

Knowledge management has long been identified as a driving force behind the success of a business or industry. In today's globalized and highly competitive business era, the capacity to capture, share, and collaboratively create knowledge is now—more than ever—considered vital for maintaining and improving competitive advantage, both at the enterprise and the industry level (Omotayo, 2015; Rajabion, Mokhtari, Khordehbinan, Zare, & Hassani, 2019). Capturing and preserving knowledge is important for organizations to retain a high level of institutional knowledge; sharing it, both within and across organizational boundaries, is important to ensure competitive edge and stimulate the creation of new knowledge. Constituting the backbone of innovation and technology development, knowledge exchange has been shown to result in improved international competitiveness, turnover, and product development activities, and reduced costs, with beneficiaries not only being single firms but also regions, industry sectors or countries (Akgün, Byrne, Keskin, Lynn & Imamoglu, 2005; Grant & Baden-Fuller, 2004).

Given these benefits, knowledge sharing is increasingly being promoted in many industries. Also within the Netherlands, and specifically in the Brainport region, there is a growing awareness that maintaining its leading position in High Tech requires openness and collaboration (Otgaar, van den Berg, & Speller, 2017). This,

however, is challenging given the region's strong reliance on SMEs and SME's natural tendency to be rather reluctant when it comes to sharing knowledge across organizational boundaries, whether in horizontal (i.e., with competitors) or vertical (i.e., with channel members) relationships (Wong & Aspinwall, 2005). For a considerable part, this reluctance is based on ignorance. Most prominent is a fear of losing competitive edge (Gast, Gundolf, Harms, & Collado, 2019). But not all knowledge is unique or competitive; some may concern general information that is available on the Internet or in textbooks. Yet, having this information readily available among partners could greatly contribute to quality, efficiency, and cost effectiveness of an industry, while companies would still have their own unique value based on more company-specific institutional knowledge.

Another hurdle, one that is less obvious but probably equally obstructive, is the fact that actually putting knowledge sharing into practice is quite a complicated matter. Companies are not always aware of the value of the knowledge they carry and making it available is difficult as the most relevant knowledge is often experience-based and hard to pass on to others. Experts, often being unknowingly competent, may not have the necessary skills to capture their own knowhow and convey this knowledge in a structured manner. And when they do have the ability to do so, it is hard to secure the resources (i.e., time and money) to engage in such initiatives (Riege, 2005).

Considering these issues, a real world example of a collaborative knowledge sharing project would constitute a welcome contribution to the practice-oriented literature. In this article such an example is provided by means of an overview and analysis of the 'Van Eijk Project', a shared initiative of the Knowledge Sharing Center, Van Eijk Transmissie, Craft Education, and Metaalunie to capture the knowledge about the application and production of high-quality mechanical drive components from employees at Van Eijk Transmissie and make that knowledge available for internal and external use. The objective of the article is to provide an overview of the motives, efforts, experiences, and outcomes of the project, and to generate insights and lessons learned for other SMEs that consider engaging in a comparable initiative.

Towards this purpose, I screened project documentation and conducted a total of 7 interviews with various employees, managers, and stakeholders involved in the 'Van Eijk Project'. Using a semi-structured interview format, interviewees were asked

about the objectives, expectations, efforts, experiences, and perceived outcomes and impact of the project, as well as points of improvement for potential future knowledge sharing initiatives. Juxtaposing their narratives and opinions against recent insights from the knowledge management literature, I aim to answer a number of practically relevant questions, such as: How can expert knowledge systematically be captured and made available for internal and external use? What does this require from an organization in terms of effort and mentality? What barriers to knowledge sharing are likely to be encountered and how are to be overcome? Which factors determine the success in knowledge sharing? What are the lessons learned from the current project for other organizations who would want to engage in a similar project. In the following, a description of the Van Eijk Project is presented, after which the above issues will each be addressed, to finally drawn lessons learned from this example for future initiatives in knowledge sharing.

2. The ‘Van Eijk Project’

Van Eijk Transmissie is part of the Van Hoof Group, together with HMF Nederland and Nima Speciaalwerk, which was established as a supplier in the metal industry and consists of about 70-80 employees. Van Eijk Transmissie is specialized in the manufacturing of precision mechanical drive components (e.g., gearwheels, sprockets, spline and gear shafts). Components are produced for clients in the manufacturing industry, automotive industry, the medical sector, the energy sector, and in various other sectors. The company relies heavily on a limited number of employees with expertise in the application and manufacturing of these mechanical drive components, some of which have been with the company since its establishment in 1993. Working in the company for so many years, these employees have gained extensive knowledge of and fine-grained experience with its processes and procedures. Yet, because this area of expertise is no longer taught in schools, and capturing and transferring the expert know-how in practice is difficult, this knowledge and expertise threatens to be lost, both for the organization as well as for the industry. Therefore, together with Knowledge Sharing Center, Craft Education and MetaalUnie, and based on a subsidiary of MKB Idee, a project was initiated to capture this knowledge from the company’s experts and make it available for internal and external use. This project became known as the ‘Van Eijk Project’.

The aim of the project was to capture and articulate existing knowledge about mechanical drive components and make this knowledge transferable internally, and partly also externally. Capturing and sharing knowledge about the application and manufacturing of mechanical drive components from experts to trainees is expected to result in personal growth of employees, reduce a company's vulnerability, contribute to process and quality improvements, and stimulate growth and development of the company. Moreover, sharing knowledge about the applicability and manufacturing constraints of mechanical drive components with original equipment manufacturers (OEMs), engineering bureaus, development agencies, and educational institutions is expected to contribute to heightened proficiency and effectiveness in the supply chain through increased feasibility and suitability of designs and applications. Additionally, a more general goal was for the project to function as an example to other companies who would want to initiate comparable projects, either in a similar or a different industrial context.

The project was based on the KnowHow methodology for capturing expert knowledge and making it transferable. The methodology is developed by Craft Education after the 4C/ID model of van Merriënboer (1997), which is an evidence-based model for developing vocational training programs. Central to van Merriënboer's model is the idea that professional competences are best acquired through "whole-task practice", that is, by practicing meaningful, authentic (learning) tasks as one would encounter them in a professional context. Besides "whole-task practice", three other components are considered necessary for competence development: supporting information, procedural information, and sub-task exercises. Supporting information (i.e., knowing what) offers background information to guide reasoning and decision making related to the task, procedural information (i.e., knowing how) offers guidance in executing the task, and sub-task exercises help in automating routines that are helpful in carrying out later professional tasks. The KnowHow methodology uses this model not only for developing training programs, but also for capturing the expert knowledge to be taught in these programs.

Toward the latter purpose, Van Eijk Transmissie's experts were asked to go through the motions of executing meaningful, authentic tasks from the professional context. While doing so, they were prompted to think out loud and to articulate the how, what, and why of the acts performed and the reasoning behind it. Typically, in every day practice, experts are hardly aware of the knowledge and expertise that they

use in task execution, as it is part of their routine. Yet, by instructing them to break the task down into a sequence of steps and explain the reasoning behind each of the actions taken in those steps, the knowledge and know-how that is crucial to accurate task execution but hard to articulate can be uncovered and explicated. Subsequently, this procedural information was systematically documented and complemented with learning tasks and supporting information to form a training program, with an accompanying textbook and e-learning modules, for trainees to acquire professional competences related to the design, manufacturing, and application of mechanical drive components.

The entire project took over a year to complete. Craft Education's didactician worked in close collaboration with Van Eijk Transmissie's team of experts, making sure that a safe and trusted atmosphere was established that allowed the experts to be fully transparent and open about their work routines and processes. Moreover, even though it was an internal project, it was given the status of an official order, to make sure that the experts would be able to dedicate the necessary hours and to protect the project from rivaling priorities.

At the time of writing the project is in its final stage as documentation is being completed. Meanwhile, a group of about 5 employees of Van Eijk Transmissie have started the training program. Included in this group are some of the experts who participated in the project to evaluate whether their knowledge is correctly being represented. Also, external knowledge availability is being prepared in collaboration with some e-learning and knowledge sharing platforms in the technical sector (i.e., Ozone and KSC).

3. Motives for the project

Extensive research has led scholars to conclude that strengthening one's ability for capturing, learning from, and sharing knowledge will benefit organizations in multiple ways (Janus, 2016). First, it will allow them to become more effective. With access to critical knowledge when and where needed, organizations can accelerate operational processes and avoid mistakes. Moreover, it will allow them to maintain a high level of institutional knowledge, even when key staff members depart, thereby reducing a company's vulnerability. Also, it will allow them to solve operational problems by continually evaluating and taking to scale what worked in isolated instances and avoiding what didn't. Besides securing professional competences and

improving internal business operations, sharing knowledge across organizational borders been shown to enhance efficiency, flexibility, and cost effective solutions, and contribute to the creation of new knowledge and the strengthening of innovative competitive edge (Guile & Fosstenlökken, 2018). In addition, organizations increasingly realize that these objective is more easily established together with other companies, resulting in strategic alliances, supply chain partnerships, and other forms of collaboration (Loebbecke, van Fenema, & Powell, 2016).

Interviews with the members of the project team revealed that the abovementioned motives, as obtained from the literature, were also driving the ‘Van Eijk Project’. Interestingly, the project partners reported different motives for engaging in the project, focusing on benefits for their own company, for the supply chain, or for the industry at large.

The primary reason for Van Eijk Transmissie to engage in the project was to secure the knowledge base for the company. Because the skills and expertise for manufacturing mechanical drive components is no longer taught in schools, the company needs to arrange this training by itself. However, the company has only a limited number of employees with expertise in this area, some of who are starting to get close to their retirement. Having to provide training to interns and new staff besides also doing their regular job, these employees are quickly overburdened. According to the company’s CEO, Nicol van Hoof, having the knowledge and expertise captured and documented would greatly facilitate the learning trajectories for new staff and trainees. Moreover, it would help to make future generations enthusiastic for working in the industry. And finally, she also considered the project an excellent opportunity to strengthen the company’s commercial base. As the market is increasingly dominated by electronic drive components and young engineers get educated about electronic rather than mechanical parts, knowledge of the technology is eroding, thereby threatening its viability. As Nicol van Hoof herself put it: “I cannot sell a product that nobody knows about. Young engineers have to be familiar with the technology and its area of application for it to be used.” Craft Education also saw commercial benefits in the project. They saw the project as a way to validate their methodology, besides emphasizing the importance of showing the value of collaboration in bringing knowledge to life.

For KSC and Metaalunie the external knowledge sharing objective was key. Related to this, Arno Sprengers, founder of the Knowledge Sharing Center (KSC),

highlighted the value of the project for stimulating knowledge sharing in the supply chain, thereby realizing higher quality and efficiency in the manufacturing industry. “When technical engineers are not aware of the design constraints of a particular technology because it is no longer part of their curriculum, this can seriously jeopardize design quality and slow down production processes. Openly sharing technology specifications will allow designers to take these constraints into account at an early stage, thereby increasing quality, efficiency, and cost effectiveness in the supply chain.” Finally, Anke Meuffels of Metaalunie underscored the project’s potential for strengthening the regional industry’s competitiveness. She mentioned seeing the project as a vehicle to advertise knowledge sharing in the manufacturing industry and showing SMEs how its done, to thereby break down barriers and stimulate collaboration and innovativeness across disciplines in the entire sector.

4. Knowledge sharing barriers

Despite many reasons to try to capture and disseminate knowledge, scholars have identified numerous barriers hindering fruitful knowledge sharing initiatives, operating at various levels: organizational, managerial, financial, individual, and technological. Riege (2005) provides a comprehensive overview of the hurdles that companies must overcome to achieve effective knowledge sharing. Here I will highlight some that are particularly relevant in SMEs.

Barriers at the organizational or managerial level tend to be linked to economic viability, lack of vision, lack of infrastructure and resources, and a physical environment that is not conducive to knowledge sharing. All too often there is lack of leadership and managerial direction clearly communicating the benefits and value of knowledge sharing practices. Consequently, management may not provide sufficient support for sharing practices, not only in terms of vision, but also on a more practical level in terms of deficiency of resources (i.e., time and space) that would provide adequate sharing opportunities. Also, hierarchical structures may inhibit or slow down the flow of information or restrict it to flow in certain directions only (e.g., top down).

At the individual level, barriers are often related to a lack of communication skills and social networks, overemphasis of position statuses, a lack of time, and a lack of trust. The ability to share knowledge depends first and foremost on employees’ communication skills and their exposure to relevant networks. Also, employees may have low awareness and realization of the value of possessed

knowledge for others. Prominent is also an apprehension that sharing may reduce or jeopardize one's power, status, and job security. Knowledge is power, so why share it? Consequently, the level of trust—between companies, between sub-units, between functions, and between individuals—have a direct influence on the communication flow and hence on the amount of information being shared.

Being asked about experienced barriers in the Van Eijk project, several were identified. A first set of hurdles brought forward were practical ones, related to time and money. Capturing the knowledge consumed a considerable number of hours. To protect the project from being underprioritized, it received the status of an official order, thus consuming valuable production time, resulting in considerable costs. Although the subsidiary of MKB Idee compensated for some of these costs, this was a genuine concern. According to the project team, this is exactly what makes the combination of internal and external knowledge sharing interesting. Increased internal information flows supports a company's learning capacity, but dispersing it on a larger scale helps to promote company products and services. In effect, initial costs associated with capturing knowledge may eventually be compensated by increased commercial success.

A much more important barrier to break was the opposition that the CEO of Van Eijk Transmissie experienced from members of the board, in particular from the founding fathers of the company, who were highly opposed to the idea of sharing knowledge externally, stating "it would be utterly foolish to throw the knowledge with which one earns one's living right there on the streets". As evidenced from the literature, this is not an uncommon reaction, and it can be a legitimate concern. Evidently, some information is sensitive or otherwise commercially determinative and therefore not suitable for external dispersion. However, this is often a much smaller proportion than is usually being assumed.

An important step toward overcoming this barrier was to draw a very clear line between knowledge and expertise that could and that which could not be shared externally. The solution was that general knowledge about the design and application could be shared freely, being the type of knowledge that would be available from textbooks and internet. Yet, any competitive-sensitive information about company-specific production processes would remain confidential. Related to this issue, Nicol van Hoof mentioned that she really tried to convince those around her of the power of demonstrating to outside world the wealth of expertise available in her company as a

way to connect with those that are of great value to the company's success. However, the general experience in the whole project team was that it really takes a strong spokesperson with an extensive amount of energy and determination to convince others of that message.

Finally, as was noted previously, it is important to realize that the success of knowledge sharing projects relies heavily on the willingness of individual employees to share their knowledge and experiences with others. This is not a given. For many employees, knowledge is power; it provides them with a certain identity and status. Hence, individual employees may be reluctant to share their knowledge when they do not see any personal benefits (Riege, 2005). At Van Eijk Transmissie, this clearly turned out not to be the case. Being asked about this, the experts of Van Eijk Transmissie reported that they were well aware of the company's need for securing their expertise on a broader basis within the company, but that they also perceived personal benefits in openly sharing their knowledge in that they would be less occupied with training and helping others. It was not that they did not like teaching others, to the contrary, but it is highly time consuming. Moreover, the experts reported being proud of their work and that they appreciated the fact that the company valued their expertise. They personally considered it important that this knowledge was available to others and that the profession would continue to exist. For them, making their expertise available to others was both meaningful and fulfilling.

5. Project outcomes

Within a relatively short time, knowledge sharing has gained itself a prominent position in theory as well as in practice. Increasingly, companies are motivated to jointly reap the benefits of the knowledge available in the wider ecosystems, particularly in the context of product development and innovation. The Van Eijk Project illustrates that the relevance of knowledge sharing is not limited to the R&D context. Armed with a clear vision and towering determination, the CEO of Van Eijk Transmissie has managed to overcome scepticism and resistance, which means that a wealth of knowledge and expertise about mechanical drive components is now captured in a modern, digital e-learning training program, that is readily available for the company as well as for schools and the industry at large. Having this knowledge available at all times, regardless of the availability of the experts, offers unique resources for staff training and development. As such, the project aligns very well

with the current trend of life-long learning, work-learn trajectories, and e-learning as ways to secure the standard of expertise and boost organizations' learning capacity (Serrat, 2017). Moreover, in sharing the knowledge externally, Van Eijk Transmissie is also portraying itself as a future-oriented company that is confident about its unique assets and inviting the outside world to come and do business. As such one could say the project is contributing to the company's positive image within the sector.

In addition, the project has also had a positive impact for the company's employees as it has allowed them to recognize the value of their expertise. They have been experiencing that they can be proud of their craftsmanship and that the company is highly appreciative of their knowledge contributions. As such, the project has generated feelings of pride, fulfillment, meaningfulness, and belongingness, which are all known to highly conducive to employee engagement and flourishing (Demerouti, Bakker & Gevers, 2015).

6. Lessons Learned

There are several lessons to be learned from the current project. First, it is important to realize that knowledge sharing is a means and not an end in itself. It can serve various important objectives, but it also takes a lot of time and effort. Management should always have a clear view as to why it is desirable or necessary to invest time and money, otherwise initiatives may easily be undermined by opposition. Successful knowledge sharing requires vision, persuasiveness and dedication. A project like this will only succeed if everyone, from board members to experts, believes it to be valuable. Another important contribution of the 'Van Eijk Project' is that it shows the value of bringing in didactic professionals to unlock, capture, and document expert knowledge in a systematic manner such that others can internalize that knowledge and start to think as the expert. Third, the project indicates that the combination of internal and external knowledge sharing may have enormous added value for individual businesses as well as the industry at large. In this regard, it is important to make a clear distinction between competitive and non-competitive knowledge and to set clear boundaries as to what is and what is not to be shared externally such that a company may safely share the non-competitive knowledge with horizontal and vertical partners, for everyone's benefit. Finally, the project pays lip service to cooperation through knowledge sharing, but has by design also been advocating for cooperation in the process of knowledge capturing and knowledge

sharing itself. Taken from their testimonies, each of the contributing partners has played a crucial role in realizing the project objectives and pushing the project forward. With joined forces they created a powerful initiative that served its multiple purposes well.

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