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A TARTALOMBÓL:

Seyr, Bernhard F.

Die drei Dimensionen des Wissensmanagements: Empirische Studie anhand des 3-D-Modells zur Selbstevaluation von Organisationen

Szendi, Nikoletta – Székely, Csaba
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in Automotive Industry Projects

Mariš, Martin – Marišová, Eleonóra
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Integráció, autonómia és gazdaságfejlesztés
Dél-Tirol példáján keresztül

Pataki László – Kenesey Zsófia
A betétbiztosítás növekvő szerepe Európában és hazánkban

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Analysis of Knowledge Sharing Process in Automotive Industry Projects

Szendi, Nikoletta³ – Székely, Csaba⁴

ABSTRACT: The main goal of the automotive companies is to increase their competitiveness. Developing new types and models contribute to their value creating activities. The prosperous companies can react faster to the shortening life cycles by preceding the developments of the competitors. Their advantage lies in the question that how rapidly they can keep track of the technological changes. In addition to other resources the successful and rapid accomplishment of the changes depends on the professional knowledge of the employees. In the process of making changes the project as a single task gets more and more emphasis wherein the explicit and tacit knowledge of the project members are added to the efficiency of the projects.

The aim of the research is to investigate the knowledge sharing process from the point of view of the suppliers and project members delegated from the organization and in addition, to transfer tacit knowledge at the initial phase of the project, at the time of entering, after accomplishing the task and at the closing phase of the project, at the time of leaving the project. After closing the project the project members can either keep doing their work in another project or return to the department they had been delegated from. Can knowledge transfer operate at project level? Will the professional knowledge of the project members and the suppliers involved in the project be kept?

KEYWORDS: knowledge management, automotive industry, knowledge management process, tacit knowledge

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Introduction

Product life-cycle has shortened and the automobile manufacturers endeavor to manufacture new motor vehicle models preceding the developments of the competitors. Having surveyed the publications and statistics

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of EFI⁵ it can be established that expenditures allotted to developments are the most significant in the highly technologized sector. Pharmaceutical industry and sectors manufacturing mechanical and electronic products are also ranked in this sector. By increasing the budget made available for research and development purposes rate of knowledge used for developing and manufacturing certain models has been risen with little time-lag generating considerable asset value and expenditures. The development period of five-seven years (the “generation exchange”) usual so far has shortened to three-four years. Automotive industry is among the industries which are the most capable of developing. Competitiveness depends on innovation (Chikán, 2008). Managers at automotive organizations have become aware that knowledge stock is more significant than the material based capital elements, and so, the employees are supported, encouraged and impelled to share their knowledge.

Knowledge of experts acting in this branch is being esteemed since quality work can be performed more effectively by qualified and skilled employees. In addition to the engineers’ explicit knowledge that can be acquired from technical professional literature, their tacit knowledge also comes to the focus of the automotive industry’s projects. Transferring tacit knowledge based on personal experiences is more complex, knowledge transfer of this like requires other factors to achieve better results. The value of knowledge does not decrease by sharing, but grows on while other parts thereof erodes or gets lost for the consideration of the organization. Future oriented way of thinking of managers is essential for implementing the engineering developments in the motor vehicle industry. Thorough planning is important not only prior to accomplishing the technological tasks but in the process of transferring implicit knowledge, as well. Organizational culture supporting knowledge share, atmosphere encouraging knowledge share based on trust are decisive for the successful knowledge sharing process in the company. Organizations in automotive industry also support and encourage keeping, transferring the employees’ knowledge and revealing the invisible knowledge.

⁵ Expertenkommission Forschung und Innovation – Experts’ Committee set by the German State to investigate research and development

Theoretical basis of knowledge transfer and share

Polányi (1966) has divided knowledge into two large groups: implicit or tacit and explicit knowledge. According to his definition implicit knowledge refers to knowledge which can be verbalized while tacit knowledge implies more than that we can tell (Polányi, 1966). Recognizing a familiar face or riding a bike are activities the exact working thereof cannot be communicated and so transferred to another person. The analogy is clear whereas there can exist certain labor process steps acquired through such implicit way which, in this range, represents knowledge that is difficult to transfer, i.e. tacit.

SECI (Nonaka-Takeuchi, 1995) model is based on this assumption. The “knowledge-spiral” proceeds from the conception so as the outward form of knowledge changes during its life-cycle. It gets from a final condition (implicit knowledge) to the other final condition (explicit knowledge) through several process steps. The model ignores lifelike cases such as erode of knowledge or emerge of confusions crop up in the course of acceptance depending on the environment and by doing so arises further questions. It concentrates mainly on transforming implicit knowledge to explicit one. It is its disadvantage that it does not take the systemic approach into consideration.

According to Sólyom (2011) importance of systemic approach is becoming more and more evident considering the geared-up changes in the economies and different societies. It is a must to see that all our decisions made in the different walks of our lives and the effects thereof cannot be restricted to the concerned field because they have impact on our environment. The systemic, complex way of thinking is to be applied to the whole of the organizations since everything relates to everything (Sólyom, 2011). In case of complexity we can talk about everywhere existing concomitant phenomenon of the economic symptoms, such as size of the organization, complexity of the product, numbers of the organizational joining points, market diversification and dynamics (Reiß, 1993). In these days services having several good searching functions for storing explicit knowledge and improving perspicuity are available. Large quantities of worded information can be accessed for the public, as well both in printed form and online encyclopedias. However, *experience* is such knowledge that cannot be acquired through learning only. Learning provides good and necessary fundamentals for labor however

it is not enough in the world of work. Experience is needed to find the mode how to treat certain people. It helps to understand things. Experience makes planning easier and helps predict the future. Experience is one of the most valuable knowledge and the employee takes it away with him when leaving the company. All these can be accomplished with *social faculties* only; ability to making and maintaining relationships is a necessary requirement at every workplace. Similarly, the requirement that the employees be open has also got great importance, since without it transferring knowledge may be difficult to initiate (Carlsen, 1999).

When converting data to information we can mention methods of putting them into context, classifying, calculating, correcting and compacting (Davenport-Prusak, 2001). When we take these principles inversely, i.e. if the transmitter conceals the context, the instructions got from a higher sphere of responsibility will be compacted inappropriately – with losses – and the essence of the information will be lost and converted to data in the better case or, in the worst case, to uninterpretable mass. This phenomenon may appear more largely in the automotive industry since working rhythm is very stressed, huge quantities of information are to be filtered and intervention is required at the right point.

Although implicit and explicit knowledge are in close connection with each other, stabilizing the tacit knowledge is not so easy. The critic has been worded to Nonaka's model that it presumes the complete transformability of implicit knowledge to explicit form and back. Polányi presumes that only a part of implicit knowledge can be converted into explicit one. As per the definition the question refers to practical and theoretical knowledge on the one hand and, on the other hand, the process of perception, recognition and application as well as transferring. In modern business life losing practical knowledge which was difficult to acquire can be disadvantageous to any organizations.

Methodological questions of the research

The primary information from the consideration of the research is contained in the university research carried out at the faculty of Economy and Ecology⁶ supported by DEKRA⁷. The research team examined in its research published in 2014 how the automotive vehicle development has changed on timely basis in the last decade. When determining the direction of the future developments the research team has arrived at the conclusion that the development period of five-seven years usual so far at exchanging generation has become shorten to three-four years (Schonert, 2008) and fifty percentage shorten than for fifteen years (Drath, 2010).

It is the aim of our research to investigate transferring and keeping tacit knowledge connecting to knowledge management in automotive organizations and revealing current practical application of knowledge transfer means within the organizations (Szendi, 2014).

64 motor vehicle manufacturing specialists were involved in the research. Those who were queried were graduated people with experience in automotive industry whose work depends on the principal of having information at the right time with the right contents at the right place on daily basis. Distribution of the respondents based on their roles played in the project has worked out in accordance with those shown Table 1. It has been our goal to find people who not only have been working in the automotive industry but de facto have taken part in automotive projects as project leaders, stakeholders, project members or project consultants, as well. The research is going to be presented from the aspect of keeping knowledge accumulated in projects: what efforts are being done to make use of the knowledge acquired during the project work?

⁶ Hochschule für Wirtschaft und Umwelt, Nürtingen-Geislingen

⁷ DEKRA – Deutscher Kraftfahrzeug-Überwachungs-Verein

Table 1.: Distribution of the participants in the research in accordance with their roles

(What is the role in which one can make influence on the progress of the project?)

Role	%
Assigner	4.6
Person concerned (Stakeholder)	9.2
Project leader	20.0
Project member	63.1
Project assistant	1.5
Project consultant	1.5
Total	100.0

Source: Szendi (2014)

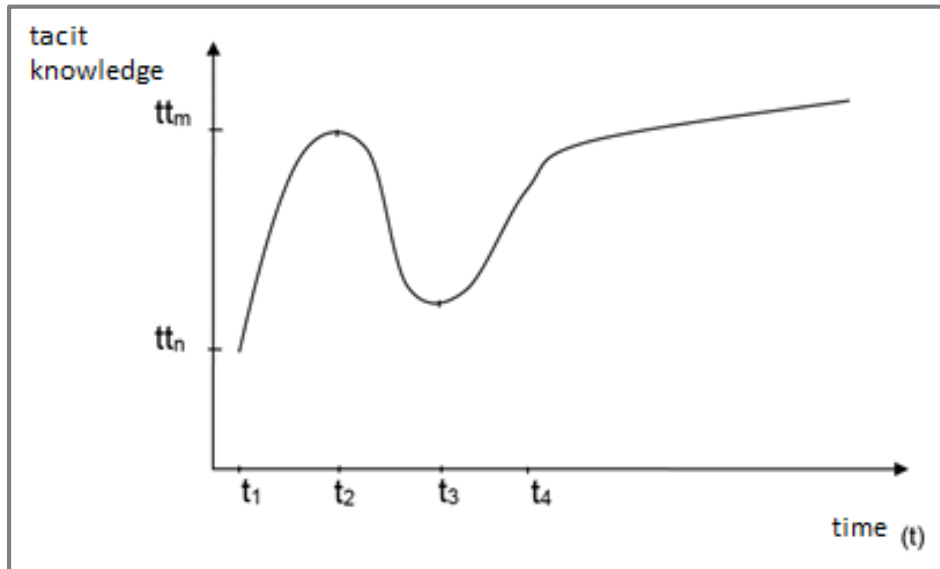
The investigation answers the following questions: How can the new employee get the implicit knowledge needed for his work? What knowledge transfer means and methods are applied in the organizations for keeping corporate knowledge when leaving? What is the rate of accomplishment of the knowledge transfer of the outside companies?

Transferring knowledge when joining the project organization

Entering a project can be as a project member and consultant having special tacit knowledge. It is presumable that the member's basic explicit and tacit knowledge fit in his sphere of activity and the range of competence. When employing, the new employee has already possessed tacit knowledge therefore at the moment of the employment the level of knowledge is a specified quantity (ttn). Since tacit knowledge cannot be measured, growing can be featured as relative value only. The entering person is starting taking up the corporate knowledge from the memory of the organization and integrating it with his individual knowledge.

This phase (table 1) is a time period as from time t_1 to time t_2 . Then comes the point, where the quantity of the knowledge taken up just worsens the situation. He feels he has done his best, but understands nothing. This nadir (t_3 on the graph) lasts longer-shorter time period in the process

of adaptation with varying depth of regression contingent upon personality, restraint and self-knowledge.



1. Figure: Tacit knowledge learning graph in relation to time

Source: Own construction

Knowledge arrangement is anyhow commencing and everyone interprets and conveys the meaning of the process differently. For instance: “things settle in order”, the contexts are revealed”, “movements sit”. In this graph it is the section between moments from t_3 to t_4 . When he has taken up the knowledge unit from specifications, process descriptions, expert knowledge and tacit knowledge then the process of adaptation has been closed, that is to say, he has reached the maturity of his knowledge’s level and starts promoting the organization to accomplish its strategic goals and visions.

Today there is nobody who manages a single task only, but acts on one or more professional fields of knowledge, while expanding his perspective horizontally. Training time period is specified differently in order to maximize the rate of expenditure-profit. According to 56.3% of those queried thinks that knowledge and experience relating to motor vehicle manufacturing are transferred when doing work jointly during the first half of the training cycle (see next table 2.). Accordingly, the two employees work side by side.

According to Davenport-Prusak (2001) the organizational knowledge transfer is essential in terms of the company's success. The trainee keeps watch on the experienced, skilled transmitter's motions, which were skilled during years. In the case of body ironers working in motor car manufacturing industry the empirical-based knowledge i.e. acquired routine has got the greatest importance in order to keep the right sequence of the activities in the course of assembling the bodies efficiently. 26.6% of those queried took workshop tasks the second more considerable knowledge sharing means. Since knowledge sharing is a value creating activity, the value thereof is realized when the organization gets advantage in competition through the product. Existence of knowledge share in organizational culture and atmosphere built on trust to encourage knowledge share are basic requirements of the successful knowledge share of the company. Effective functioning of knowledge share is field specific, depends on the manager of the given field.

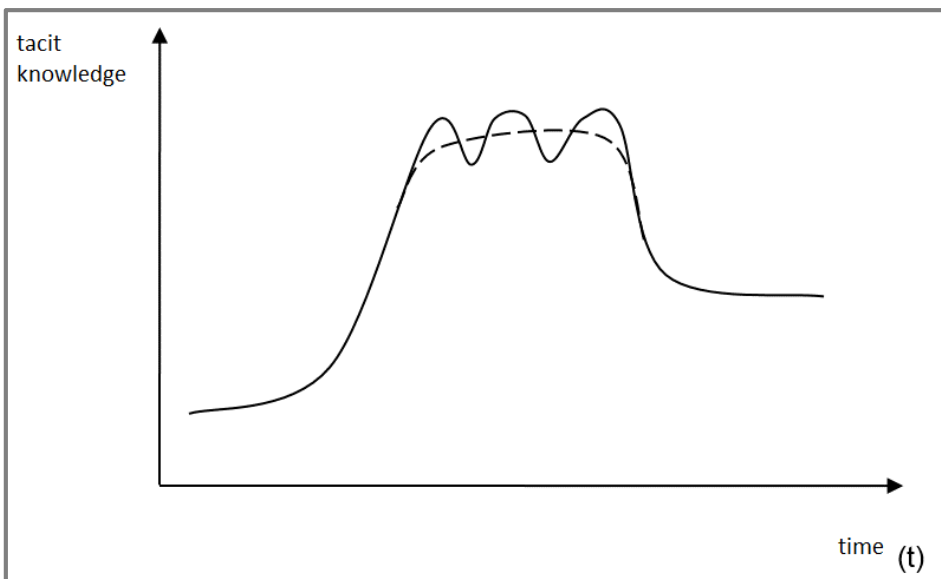


Figure 1.: Faculty level of tacit knowledge in relation to time

Source: own construction

In technical literature motivation of knowledge management and people who are interested in transferring is distinguished and investigated with differing emphasis. However, theory and practice deal – in most cases – with the motivation of knowledge transfer in general and not with

the motivation of the key persons' knowledge share. It is psychology which examines the field of motivation research. Further on, these results are adapted by manager training courses. It has got several reasons and the most important one is that we can speak about willingness to tacit knowledge transfer in merit if personal motivation is given. It is as follows at the development departments of automotive manufacturing companies. Each new employee at the company can get acquainted with the product itself through practical trainings. Extent of the training depends on the scope of activities of the hired labor. Development of tacit knowledge is not balanced, after acquiring basic knowledge natural fluctuation evolves in the course of practical application (Figure 2.). During body manufacturing process mode of knowledge transfer accomplishment is different between those who work at logistics and those who perform the reworking process. Well-developed organizational structure is decisive for promoting sociable relationship between the employees. Flat organizational structure is more advantageous because more sociable atmosphere and more effective team work can be accomplished by avoiding hierarchy and by this means, knowledge transfer will be more efficient. The managers use different means and methods to improve human relations and help cooperation between the employees. However, the organization members actually cannot reach the company's target concerning the company culture, because in general, these targets describe merely an ideal status. Nevertheless, they can keep developing their responsiveness in order to recognize such situations and handle them accordingly. However, progress is very slow and difficult to influence and cannot be enforced. In many of the cases, the process sticks in and the cooperation comes to a dead-lock. Professional independent aspect of an external viewer can help the two employees to systemize the required and existing knowledge with such a structured method of which they did not think they know or it can be important for the other.

Knowledge transfer at the phase of leaving the project organization

Thoroughness of planning is important not only in the process of implementing the technological tasks but in pursuance of knowledge transfer

process, as well. Leak-away of implicit knowledge means loss for the organization. The companies apply different methods for encouraging (table 2) knowledge transfer.

Table 2.: Methods of corporate knowledge transfer

(Which method is applied to keep corporate knowledge after leaving?)

Method	%
Leaving interview	1.6
Acceptance process as agreed	26.6
On the basis of process of acceptance as laid down	15.6
Training the successor	56.3
Total	100.0

Source: Szendi (2014)

As 56.3% of those queried sees it, the employee leaving the company works together with the new employee and trains his successor. According to 26.6% the second most frequently applied method for the purpose of keeping knowledge is the (non-fixed and non-structured) procedure of acceptance as agreed upon. Since it doesn't proceed under a uniform scheme, only the ones are transferred which the transmitter thinks worthwhile and the recipient expects to get. In some respects, transferring knowledge depends on emotional motives and proper application of non-systemized means, as well. However, if it is done to the mutual satisfaction of both parties, then it can be considered as successful. Unfortunately, mostly this is not the case and the knowledge acquired before is to be attained again. Only 15.6% of those queried thinks that the process of fixed acceptance was accomplished. Due to its time and expense demand the knowledge bearer and the precious knowledge walks out of the door hand in hand.

The disadvantage emerges differently in case of the employees leaving and ones who proceed. It is not necessary to have economic inconvenience measured in cash i.e. less earnings or bonus to feel the employee that his interests are jeopardized and refuse any further cooperation or turn out to be a competitor. It is the supposition communicated in general answers aiming at the existence and mode of motivating knowledge transfer

that the members of the organization take cooperation obvious, however, the excess of impetus or self-confident of the recipient can bring the leaving employee out of his conceit and the process of acceptance may turn out into a mere formality. Under the pressure generated by migration and fluctuation in the automotive industry the companies are forced to replace the professional knowledge necessary for the organization by experienced experts from external sources on the basis of contracts of assignment (Boga-Pohl, 2013).

Table 3.: Answers of those queried to the question about knowledge transfer efficiency
Can the suppliers' knowledge transfer be accomplished?

Answer	%
Completely	12.5
Partly	67.2
Not at all	20.3
Total	100.0

Source: Szendi (2014)

Knowledge transfer of external co-workers (table 3) is accomplished completely based on the answers of only 12.5% of those queried while as per 67.2% just partly and 20.3% thinks it is not accomplished at all. When effectuating changes takes longer time it is expedient – in addition to documentation and shop work – to implement an acceptance procedure in accordance with specified guidelines updated on regular basis because the data show that knowledge transfer has been accomplished partly in 67.2% and completely only in 12.5 %. Knowledge stock of employees of external companies does not belong to the invisible subsurface asset of the organization but it is in the knowledge stock of the other company. The employee is at the disposal of the company until the expiration of his labor contract and then he also leaves the company taking his knowledge away with him.

SUMMARY

Automotive companies can increase their competitiveness by manufacturing innovative products. Knowledge stock has become the most important resource in terms of development and growth of market organizations. Technological changes generated by innovation require persistent renewal of the employees' knowledge and further professional development. Developing new and more innovative motor vehicle models can be implemented more efficiently and on cost-conscious basis by qualified employees having updated professional knowledge. Cooperation between motor vehicle manufacturing companies and universities, vocational schools provides the knowledge elements to the young employees in the long run which are needed to operate the company. Level of basic qualification of the employees is conformed to the given organization however it doesn't solve the problem of knowledge kept in the organization.

The research verifies the assumption that process of knowledge transfer doesn't work efficiently in the automotive industry projects. Since, based on the answers of those queried knowledge transfer is accomplished only *partly* or *not at all*, this way the recipient can't get the feeling of satisfaction over his knowledge acquired. There are too many unnecessary rounds when sharing knowledge, i.e. employees of motor vehicle manufacturing companies need to process a lot of things again and again, although this knowledge should be available to the organization's memory. Henceforward, the most frequently applied method is training, working jointly. The results in terms of keeping knowledge are not satisfactory. We have been led to the conclusion that the time available to implement the knowledge transfer process and efficiency needed for the success accomplishment thereof are not enough. The transmitting person should be so much interested in the success of the knowledge transfer process just as the recipient. This statement may be true in case both the transmitting person and the recipient feel alike the work useful. The transmitting employee is at the disposal of the company until the expiry of his labor contract and then he also leaves the company taking his knowledge away with him. Transferring knowledge is not in the interest of the employees of the supplier assigned to replace the leaving employees because it is their target to keep their current position and by doing so ensuring the future employment.

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