

A Strategy Map of Tacit Knowledge for Manufacturing Companies. An Empirical Study

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Abstract. The implementation of business strategies in an enterprise requires the engagement of all employees, but especially of knowledge workers. In this way, many organizations are focusing on knowledge sharing within the company. Knowledge sharing among knowledge workers could be a critical enabler of an effective implementation of business strategies. This study analyzes the links between the knowledge sharing of knowledge workers and the success of the implementation of business strategies in Polish manufacturing enterprises. It focuses on defined groups of knowledge workers in a manufacturing company and is based on a survey and on data obtained from 119 Polish manufacturing enterprises. This is followed by a discussion of the results of the empirical studies and of the supporting literature.

Keywords: Tacit knowledge · Business strategy · Manufacturing company

1 Introduction

Knowledge workers can create, distribute, or apply knowledge within their work in an organization. To achieve a strategic objective, knowledge workers should be encouraged to share useful knowledge across the organization. Knowledge sharing reflects the dynamic aspect of a strategic level of a company [16]. According to Hong et al. [10] it is a distinguished practice (what knowledge workers do) and possession (what knowledge workers know) of knowledge. We tried to clarify and analyze knowledge-sharing practices by conducting a study with 119 Polish manufacturing enterprises.

Bolman and Deal [3] explained that an effective implementation of business strategies should integrate a company's structure and also human resources. Organizational challenges are very often related to knowledge sharing within a company [7]. Tacit knowledge sharing among knowledge workers can create more added value for the organisation than explicit knowledge [4]. Argote et al. [2] stated that to enhance tacit knowledge sharing within a company, it should create a flexible social structure. To achieve a more contextually-rooted discussion, this paper defines groups of

knowledge workers in a manufacturing company, looks at how they could influence the achievement of strategic objectives and explores the impact of tacit knowledge sharing among knowledge workers on the defined objectives of a business strategy.

The proposed strategy map of tacit knowledge for manufacturing companies supports the selection of a group of knowledge workers who may have an impact on the success of the implementation of business strategies. The proposed map was based on data gathered from 119 Polish manufacturing companies. This study tries to ascertain the effects of knowledge sharing by knowledge workers on a strategy realization process in a manufacturing company.

The remainder of this paper is organized as follows: Sect. 2 presents the theoretical background of the study. Section 3 describes the research model, explains the research methodology and examines the research results. Section 4 provides a conclusion.

2 Theoretical Background

In the literature, three types of tacit knowledge are defined: somatic tacit knowledge (physical engagement with the working matter), contingent tacit knowledge (collection of projects), and collective tacit knowledge (social relationships between workers) [5, 6, 15]. A knowledge worker can be motivated to share their knowledge by appropriate organizational support [1, 14].

Tacit knowledge can be shared within an organization by using different methods; supported or not supported by information and communication technology tools. The structure of tacit knowledge sharing in a manufacturing company includes the externalization of knowledge by the knowledge transmitter and the internalization of knowledge by the receiver [11]. Tacit knowledge sharing of knowledge workers refers to the degree of communication and sharing of tacit knowledge, such as experiences, ideas, and expertise among employees within an organization [12, 13, 18].

This study posits that tacit knowledge is shared by knowledge workers to other knowledge workers in each department of the manufacturing company by the use of methods not supported by ICT, i.e. daily face-to-face meetings and coffee breaks [17].

To support tacit knowledge sharing among knowledge workers within a company, a strategy map of tacit knowledge was formulated in this study. The strategy map links strategic business objectives with knowledge-sharing practices [8]. This study takes the position that a strategy was realized if a set of defined and desired strategic business objectives were achieved. The following strategic business objectives in a manufacturing company are defined:

- Strategic Objective 1: Building a culture of inter-cooperation (SO1).
- Strategic Objective 2: Increasing the potential for innovation (SO2).
- Strategic Objective 3: Increasing the sales volume (SO3).
- Strategic Objective 4: Improving the efficiency of business processes (SO4).

The conceptual model shown in Fig. 1 depicts the relationships among knowledge workers in a manufacturing company that it is examined (see Fig. 1).

In order to facilitate the description of the defined relationships, the strategy map of tacit knowledge for manufacturing companies should be organized in a standardized way, shown as follows:

Table 1. The strategy map of tacit knowledge for manufacturing companies

Tacit knowledge sharing among knowledge workers by the use of the methods of daily face-to-face meetings and coffee breaks (TKS)	The achievement of strategic objective 1 (SO1)	The achievement of strategic objective 2 (SO2)	The achievement of strategic objective m, m ∈ N (SOM)
KWP	R(KWP,SO1)	R(KWP,SO2)	R(KWP,SOM)
KWS	R(KWS,SO1)	R(KWS,SO2)	R(KWS,SOM)
KWD	R(KWD,SO1)	R(KWD,SO2)	R(KWD,SOM)
KW _n , n ∈ N	R(KW _n ,SO1)	R(KW _n ,SO2)	R(KW _n ,SOM)

where:

- KWP - the set of Knowledge Workers in the Production Department in a manufacturing company.
- KWS - the set of Knowledge Workers in the Sales Department in a manufacturing company.
- KWD - the set of Knowledge Workers in the Research and Development Department in a manufacturing company.
- KW - the n-set of Knowledge Workers in a manufacturing company.
- R – relationship (correlation) between tacit knowledge sharing among knowledge workers and the achievement the strategic business objectives.

3 Research Methodology and Research Results

Before the survey was carried out, the main departments: production, sales and research and development in a manufacturing company in which knowledge workers collaborate with each other according to the assumption proposed in Fig. 1, were defined by five managers and the survey items were modified based on their feedback. The data for this study were collected from 119 Polish manufacturing companies (see Table 1) in which there is a significant use of the methods of daily face-to-face meetings and coffee breaks which can be exploited in order to share tacit knowledge among knowledge workers.

The research model posits, from the aforementioned argument, that when tacit knowledge is shared by knowledge workers in a manufacturing enterprise, they are able to contribute to the achievement of the strategic business objectives of that enterprise. Before the survey was carried out, it was assumed that those companies which took part in the research would have a business strategy and be able to realize it.

The list of factors for the achievement of strategic business objectives were based on feedback surveys and its sources are listed here.

The achievement of strategic business objectives: the degree is the output that results from strategy realization which is formalized and documented within an manufacturing enterprise.

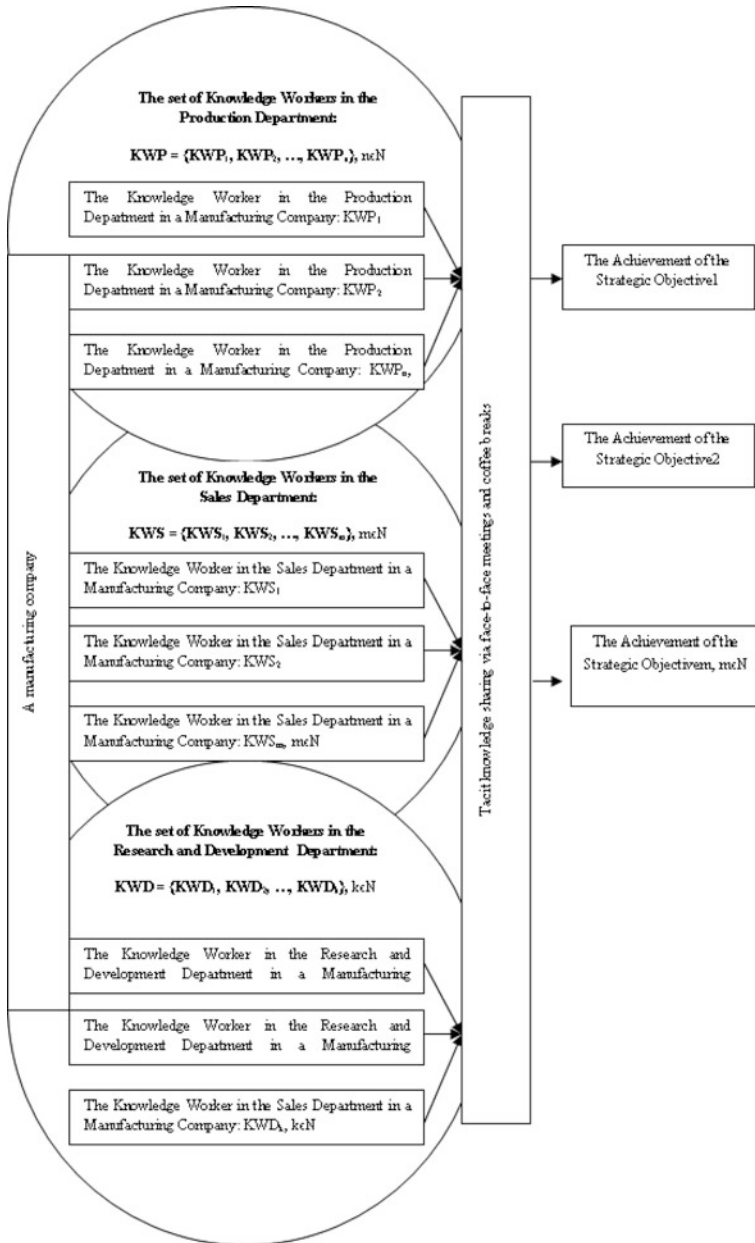


Fig. 1. A conceptual model

Sharing tacit knowledge among knowledge workers: The degree to which the use of the methods of daily face-to-face meetings and coffee breaks in an enterprise facilitates knowledge sharing among the organization’s employees.

The surveys used for testing the research model were developed by defining scales to fit the knowledge codification context. A five-point scale was used for survey items. The data for this study were collected from 119 Polish manufacturing companies between January to September, 2014 (see Table 2).

Table 2. Profile of companies and respondents

	Items	Frequency (N = 119)
Manufacturing companies	Industry	88 (74 %)
	Construction	16 (13 %)
	Others	15 (13 %)
Department of the company in which the respondent works	Management	95 (80 %)
	Sales and Marketing	24 (20 %)

The strategy map of tacit knowledge for manufacturing companies (see Table 1) was formulated using a correlation approach in order to estimate the relationships between tacit knowledge sharing among knowledge workers and the achievement of strategic business objectives. A moderated correlation approach using Statistica ver.10.0 was used to test the hypotheses. The data were carefully examined with respect to linearity, equality of variance and normality. No significant deviations were detected. Table 3 presents descriptive correlations for the main variables.

In accordance with the data received from 119 Polish manufacturing companies, finding the correlation value of the outcome of a realized business strategy, as expressed by tacit knowledge sharing among knowledge workers, enables for the formulation of the strategy map of tacit knowledge for manufacturing companies (see Table 4).

The proposed strategy map of tacit knowledge for manufacturing companies shows that the critical enabler of the effective implementation of business strategies is tacit knowledge sharing among knowledge workers in the Research and Development Department, especially for the achievement of the strategic objective: Increasing the potential for innovation.

Knowledge plays a special role in the innovation creation process. According to Garvin [9], a knowledge-oriented company means that the cooperation of knowledge workers enables the achievement of a competitive edge for the organization. Therefore, it can be stated, that tacit knowledge sharing among knowledge workers in a production department in a manufacturing company could be one of the main determinants in the growth of the innovation level of that company.

Like all studies, this one has certain limitations that further research should aim to overcome. Firstly, because the intention is to analyze tacit knowledge sharing among knowledge workers, but separately in each department of the manufacturing company, this study focuses on sets of knowledge workers who use the methods of daily face-to-face meetings and coffee breaks to share their tacit knowledge. Furthermore, all the variables are measured at the same moment in time. So, it would be useful to

Table 3. The strategy map of tacit knowledge for manufacturing companies: research results

TKS	SO1	SO2	SO3	SO4
KWP	0.2141 (r2=0.0458/t=2.370 4/p=0.0194)	0.3249 (r2=0.1055/t=3.7157/p =0.0003)	0.2183 (r2=0.0476/t=2.4191/ p=0.0171)	0.23600 (r2=0.0557/t=2.6270 p=0.0097)
KWS	0.1179	0.2417 (r2=0.058/t=2.6946/p= 0.0081)	0.1369	0.0606
KWD	0.2422 (r2=0.0587/t=2.700 4/p=0.0080)	0.4754 (r2=0.02260/t=5.8451/ p=0.0000)	0.0993	0.2476 (r2=0.0613/t=2.7642 p=0.0066)

Table 4. The recommended strategy map of tacit knowledge for manufacturing companies

Tacit Knowledge Sharing among Knowledge Workers/Strategic Objectives for a Manufacturing Company	SO1	SO2	SO3	SO4
Knowledge Workers in the Production Department	Yellow	Yellow	Yellow	Yellow
Knowledge Workers in the Sales Department	Red	Yellow	Red	Red
Knowledge Workers in the Research and Development Department	Yellow	Green	Red	Yellow

where,

- Green – Tacit Knowledge Sharing among Knowledge Workers in the indicated department in a manufacturing company influences the achievement of strategic objectives.
- Yellow – Tacit Knowledge sharing among Knowledge Workers in the indicated department in a manufacturing company relatively influences the achievement of strategic objectives.
- Red - Tacit Knowledge sharing among Knowledge Workers in the indicated department in a manufacturing company does not influence the achievement of strategic objectives

provide such research in the whole company to analyse the relationship between tacit knowledge sharing among knowledge workers in a whole company and over a longer time period. These limitations suggest proposals for future research directions, such as exploring additional methods that could improve the effect of tacit knowledge sharing among knowledge workers.

4 Conclusions

The results of this study demonstrate the measurable existence of a positive relationship between tacit knowledge sharing among knowledge workers in the Research and Development Department via daily face-to-face meetings and coffee breaks for the achievement of the strategic objective: Increasing the potential for innovation.

Transparent tacit knowledge sharing among knowledge workers in the research and development department supported only by face-to-face meetings and coffee breaks is needed to enhance innovation at the company level. This study suggests that it may be a good idea to support tacit knowledge sharing because it could increase the outcome of realized business strategies in manufacturing companies.

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