

A RESEARCH TOOL FOR ANALYSIS OF KNOWLEDGE MANAGEMENT IN THE METROPOLITAN ASSOCIATION OF UPPER SILESIA AND DĄBROWA BASIN

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Introduction/background: Knowledge management is becoming of great importance in contemporary business. Diversified tools and methods to analyse business and knowledge processes are being implemented in organisations. In the article, the author presents his preliminary research in the area of knowledge management in the Metropolitan Association of Upper Silesia and Dąbrowa Basin. He focuses on the necessary study to identify knowledge deficits, which allows for the development of a research tool supporting the analysis of knowledge processes in the Metropolitan Association of Upper Silesia and Dąbrowa Basin.

Aim of the paper: The main aim was to elaborate upon a research tool for analysing knowledge management, i.e. a research questionnaire that enables one to analyse knowledge management deficits and necessary changes in knowledge management activities in the Metropolitan Association of Upper Silesia and Dąbrowa Basin.

Materials and methods: The research involves the analysis of source materials, direct interviews with managers and a comparative analysis of business and knowledge processes in manufacturing companies and in the Metropolitan Association.

Results and conclusions: The study proves the need to apply a research tool for analysing knowledge processes and knowledge deficits. Questionnaire surveys comprehensively covering all organisational entities of the Metropolitan Association are to be utilised to take appropriate measures to improve knowledge management, consequently resulting in higher operational efficiency of the Metropolitan Association.

Keywords: the Metropolitan Association of Upper Silesia and Dąbrowa Basin, knowledge management system, knowledge processes.

1. Introduction

Effective use of knowledge in business processes is crucial for the proper social and economic development of a country. It concerns both the private and public sectors. Increasing requirements in this area make decision-makers attach great importance to the implementation of broadly understood knowledge management tools and methods. Effective management in

any area of business operations is largely determined by the proper processing and use of knowledge (Desouza and Evaristo, 2003; Stachowicz and Olko, 2015).

The development of the importance of municipal government entities indicates the need to implement methods and tools of knowledge management in order to improve their functioning. A major challenge is faced by the Metropolitan Association of Upper Silesia and Dąbrowa Basin (GZM), for which knowledge processes are one of the key areas for successful organisation and management.

The Metropolitan Association of Upper Silesia and Dąbrowa Basin has been operating since 1 July 2017 on the basis of the Act of 9 March 2017 on the Metropolitan Association in the Silesian Voivodeship. The GZM consists of 41 member municipalities. The main objective of the Metropolitan Association of Upper Silesia and Dąbrowa Basin is to use the potential of member communes, stimulate the creativity of residents and inspire changes that accelerate social and economic processes. The objective should be achieved through the implementation of own tasks and developmental projects, with particular emphasis on the needs and problems of member communes, rational spatial planning and comprehensive management of sustainable development (Statute of the GZM, 2018).

The analysis of research presented in literature and own research carried out in the Metropolitan Association of Upper Silesia and Dąbrowa Basin indicates a limited advancement of knowledge management. One of the key areas of the Metropolitan Association's activity is project implementation, which requires professional knowledge of what the projects are and how to manage them properly. In the long term, it is essential to collect and use project management methodologies, tools and best practices.

In the article, the author presents the preliminary results of research in the area of knowledge management in the Metropolitan Association of Upper Silesia and Dąbrowa Basin, focusing on contemporary views on knowledge management and highlighting its key importance for the proper functioning of the organisation. In the further part, the scope of necessary research to identify knowledge deficits is determined.

The main aim of the conducted study was to elaborate upon a research tool, i.e. a questionnaire to identify current deficits in knowledge processes, which supports the undertaking of appropriate actions to improve the efficiency of knowledge management activities in the Metropolitan Association of Upper Silesia and Dąbrowa Basin (GZM).

2. Formal requirements for the functioning of the Metropolitan Association of Upper Silesia and Dąbrowa Basin (GZM)

The Act on Metropolitan Association from 1 January 2018 defines the public tasks that are carried out by the Metropolitan Association of Upper Silesia and Dąbrowa Basin. The basic categories of public tasks carried out by the GZM include:

- shaping the spatial order;
- the social and economic development of the Metropolitan Association area;
- planning, coordination, integration and development of public transport, including road, rail and other rail transport, including sustainable urban mobility;
- metropolitan passenger transport services;
- cooperation in determining the course of national and voivodeship roads in the area of the Metropolitan Association;
- promotion of the Metropolitan Association and its area.

The shaping of spatial order aims to prepare, agree upon and implement a framework study of conditions and directions of spatial development of the Metropolitan Association (metropolitan study).

The social and economic development of the Metropolitan Association area includes:

- undertaking initiatives of supra-local importance aimed at increasing investment attractiveness, as well as improving the quality of life of inhabitants;
- supporting the promotion of scientific research findings and development projects and all forms of transfer of knowledge and scientific and technical progress to the economy;
- concluding agreements and arrangements which allow for common or coordinated execution of specific tasks, as they will contribute to increasing the effectiveness of their execution;
- concluding agreements and contracts which allow the Metropolitan Association to take over or manage infrastructure and other assets of supra-local importance;
- supporting the development of culture, sport and artistic creativity.

Planning, coordination, integration and development of public transport focus on the following tasks:

- development of a plan for the sustainable development of public transport in terms of transport modes, routes and networks in the Metropolitan Association area (transport study);
- undertaking activities which aim at improving the quality, cohesion and efficiency of public transport in the area of the Metropolitan Association;
- concluding of agreements and contracts in the scope of integration of all types of public transport means and creation of infrastructural and organisational and legal conditions

for modernisation and improvement of the quality of public transport in the area of the Metropolitan Association;

- coordinating sustainable urban mobility activities, including the development and implementation of plans to improve the quality and consistency of urban mobility in the Metropolitan Association area.

Metropolitan passenger transport services focus on the following tasks:

- preparation and implementation of a transport plan for the metropolitan transport network and, to the extent stipulated by legal regulations or agreements, concluded by the Metropolitan Association, as well as for other metropolitan transport services;
- creation of an integrated fare-ticketing system in the area of the Metropolitan Association, development and establishment of rules of mutual settlements for the participation of organisers of county, commune, county and commune and provincial passenger transport in the integrated fare-ticketing system;
- the organisation and management of metropolitan transport in order to improve the quality, accessibility and cohesion of the transport system, covering all modes and forms of public transport;
- cooperation in the forms as defined by law, planning, organisation and management of the public transport system in the area of the Metropolitan Association;
- participation in the development of public transport infrastructure, serving to further the cohesion of the Metropolitan Association area and access to its economic, educational, cultural, natural, service and recreational resources.

Cooperation in determining the routes of national and voivodeship roads in the area of the Metropolitan Association focuses on:

- delivering opinions upon the request of the minister-in-charge of infrastructure pronouncing opinions on the route of national roads, taking into account the cohesion of the Metropolitan Association's transport system and its links with the national road network;
- delivering opinions upon the request of the voivodeship's local government pronouncing opinions on the route of voivodeship roads, taking into account the cohesion of the Metropolitan Association's transport system and its connections with the remaining area of the Silesian Voivodeship.

Promotion of the Metropolitan Association focuses on:

- developing and implementing the promotional strategy of the Metropolitan Association in the country and abroad using all available forms of outreach and marketing communication methods;
- development and implementation of the internal communication system;
- development and implementation of a metropolitan visual identification system;
- investment promotion;

- coordination and standardisation of activities of member municipalities in the field of promotion of the Metropolitan Association area;
- building metropolitan awareness, increasing the social participation and influence of inhabitants on activities related to the Metropolitan Association area;
- participation in national and international associations and organisations.

Apart from the tasks mentioned above, the Metropolitan Association of Upper Silesia and Dąbrowa Basin may carry out public tasks belonging to the scope of activity of the commune, county or voivodeship municipal government or coordinate the implementation of these tasks on the basis of an agreement concluded with an entity or an association of entities of municipal governments (Act on the Metropolitan Association in the Silesian Voivodeship, 2017).

3. Knowledge management in an organisation

Knowledge in an organisation plays a vital role, and it is extremely difficult to imagine an effectively functioning organisation without adequate infrastructure and personnel promoting efficient implementation of knowledge processes (Gumiński, 2012). Many researchers point out that knowledge is one of the key resources of an enterprise (Evans, 2005; Jashapara, 2006; Jemielniak and Koźmiński, 2008). The significant dynamics of changes in the scope of internal and external conditions of enterprise activity and the necessity to process a large amount of diversified information (Kisielnicki, 2008) requires the development and implementation of a coherent and comprehensive IT infrastructure, which will enable the supporting of knowledge processes and thereby achieve an improvement in the efficiency of enterprise functioning (Drew, 1997; Dohn et al., 2013; Dohn and Gumiński, 2012a; Stachowicz and Olko, 2015). Knowledge requires appropriate acquisition, collection and use. An important element is the appropriate selection of personnel in terms of quantity and quality, which enables the efficient implementation of knowledge processes, such as acquisition, accumulation, processing and use of knowledge in business and technological processes (Dohn and Gumiński, 2012b).

In the context of the existing functioning scope of the Metropolitan Association of Upper Silesia and Dąbrowa Basin, the most relevant definitions of knowledge management found in literature can be quoted. Researchers (Quintas et al., 1997) point out that "knowledge management is about discovering, developing, using, delivering and absorbing knowledge inside and outside an organisation through an appropriate management process to meet the current and future needs of the organisation". On the other hand, other authors (Allee, 1997; Davenport and Prusak, 1998) emphasise that "knowledge management is defined through the prism of processes of acquiring, maintaining and sharing both explicit and implicit knowledge of employees in order to increase efficiency and create value for the organisation".

A crucial part of efficient implementation of a knowledge management system is the personnel. Researchers indicate several key success factors determining the effectiveness of knowledge management implementation as follows:

- a trustworthy and open organisational culture (Davenport and Prusak, 1998; Wild et al., 2022; Moffett et al., 2003);
- leadership and commitment of the top management (Van Buren, 1998; Dess and Picken, 2000);
- employee involvement (McCune, 1999; Wilson and Asay, 1999);
- employee training (O'Brien and Crause, 1995; McCune, 1999; Moffett et al., 2003).

4. The development of a questionnaire for research on knowledge processes in the Metropolitan Association of Upper Silesia and Dąbrowa Basin

The research conducted in the Metropolitan Association of Upper Silesia and Dąbrowa Basin indicated numerous limitations and deficits in particular processes of knowledge management (acquisition, accumulation, transfer, use).

Acquiring knowledge is an essential part of the life cycle of organisational knowledge (Jemielniak and Koźmiński, 2008) in any organisation. Knowledge can be acquired by purchasing knowledge (e.g. recruiting employees with appropriate knowledge resources) or borrowing knowledge (e.g. from consultants or scientists) (Dohn et al., 2013).

Knowledge is gathered in three main knowledge repositories: employees' minds (in the form of tacit knowledge), paper documentation (in the form of explicit knowledge) and computer databases (in the form of codified knowledge) (Tiwana, 2001; Dohn et al., 2013).

Knowledge transfer enables employees to access the knowledge they need. In order to achieve this objective, an adequate IT infrastructure for knowledge transfer is indispensable. Transfer of codified knowledge is carried out mainly through electronic communication channels. In turn, the transfer of uncodified knowledge is carried out mainly in the form of formal and informal meetings of employees, knowledge fairs and mentoring programmes (Dohn et al., 2013).

The process of knowledge utilisation requires assuring the efficient implementation of other knowledge management processes, i.e. processes of knowledge acquisition, accumulation and transfer. Knowledge exploitation requires the appropriate processing of knowledge resources for a specific purpose supported by different IT systems, including data management systems, knowledge management systems and next generation systems (e.g. artificial intelligence systems) (Dohn et al., 2013).

The research study undertaken in the Metropolitan Association involves the following tasks:

- thorough diagnosis of executing business and knowledge processes;
- the determination of existing knowledge deficits;
- the analysis of a questionnaire applied to examine knowledge processes in machine-building companies (Dohn et al., 2013). The tool was based on the analysis of business and knowledge processes in an organisation (Kowalczyk and Nogalski, 2007);
- direct interviews with managers of the Metropolitan Association to analyse what is needed in the range of knowledge management processes;
- a comparative analysis of processes executed in the Metropolitan Association and in machine-building companies to decide about the final structure and contents of a questionnaire;
- the verification of a developed research questionnaire with managers of the Metropolitan Association.

As a result of the above-mentioned tasks, a research tool was created. A questionnaire was created to cover, in a comprehensive way, all important aspects of knowledge management in the Metropolitan Association.

The structure of the questionnaire includes a series of questions grouped into three categories (Kowalczyk and Nogalski, 2007; Dohn et al., 2013):

- integrative level;
- structural level;
- knowledge processes and tools level.

The integrative level includes questions about factors/areas/conditions that are crucial for the functioning of the GZM. Specific questions are used to gather information about the level of relevance of individual factors. The questions relate to the following aspects:

- human resources (technical competence, economic competence, IT competence, managerial competence);
- research and development (own technologies, licensed external technologies, technologies from co-operators, strategic alliances in the field of R&D);
- market/customers/clients (domestic market, international market);
- financial management (sources of financing of the Metropolitan Association's activities, financial engineering, investment financing).

This level also covers questions about the current state and the plans for investments/activities/decisions in the GZM on knowledge management in the following areas:

- knowledge audit;
- developing a knowledge management strategy;
- appointment of entities/persons to manage knowledge;
- the establishment of formal knowledge management procedures;
- the establishment of formal networks for knowledge exchange;

- best practices-sharing programme;
- design/improve knowledge management processes;
- motivation schemes for employees for sharing knowledge;
- knowledge management training/workshops;
- creation of knowledge maps;
- benchmarking;
- the creation and development of communities of practitioners.

The structural level includes questions about the current state and plans for measures/indicators characterising knowledge processes divided into acquisition, development, codification, knowledge transfer and utilisation. A further question concerns the updating of these measures/indicators.

This level also includes questions about the knowledge management problems observed in the GZM, with an emphasis on the following elements:

- no time to share knowledge;
- redundant information;
- unnecessary duplication of the same steps;
- lack of use of technology to effectively share knowledge;
- non-utilisation of ideas for improving the functioning of the GZM;
- lack of specialists;
- lack of funds to purchase licenses/patents;
- knowledge inadequate to the existing needs.

The level of knowledge processes and tools covers questions concerning the assessment of the state and plans for each knowledge process, i.e. division into the acquisition and development of knowledge, codification of knowledge, knowledge transfer and utilisation of knowledge.

Questions on the acquisition of explicit knowledge relate to the following tools:

- benchmarking;
- gaining knowledge of customers;
- participation in conferences;
- subscriptions to professional or trade literature for employees;
- training courses;
- economic intelligence.

Questions concerning the acquisition of tacit knowledge relate to the following tools:

- cooperation with other organisations;
- internships and apprenticeships in national companies;
- internships and apprenticeships in international companies;
- gaining knowledge of customers;

- training course/workshops;
- knowledge capture (recruiting new employees with appropriate knowledge and competences).

Questions about knowledge development relate to the following tools:

- creation of R&D initiatives;
- bringing people from different departments of the company together to create new knowledge and solutions;
- the communities of practitioners;
- professional networks.

Questions on codification of explicit knowledge relate to the following tools:

- paper document selection procedures;
- electronic document selection procedures;
- paper document archiving procedures;
- electronic document archiving procedures;
- paper document updating procedures;
- electronic document updating procedures;
- paper document accessibility procedures;
- electronic document accessibility procedures;
- document databases;
- project databases;
- best practice/ideas/solutions databases.

Questions on the codification of tacit knowledge relate to the following tools:

- employee education database;
- employee competence database;
- database of experts;
- database of certificates held;
- database of owned licenses/patents.

Questions on the transfer of explicit knowledge relate to the following tools:

- e-mail;
- Internet;
- Intranet;
- bulletin/newsletter;
- document workflow system;
- knowledge brokers;
- lectures;
- internal training;
- workshops.

Questions on tacit knowledge transfer relate to the following tools:

- internal training;
- best practices-sharing programme;
- teleconferences;
- videoconferences;
- debates/discussion forums/chat;
- mentoring programmes;
- knowledge fairs;
- knowledge brokers.

Questions on knowledge utilisation relate to the following tools:

- process innovation implementation procedures;
- product innovation implementation procedures;
- project/programme planning procedures;
- after-action review (AAR).

The level of knowledge and tool processes includes questions about the level of effectiveness of information resource management and communication in the GZM.

They concern the following technologies:

- Internet/Intranet/Extranet;
- portals;
- videoconferences;
- bulletin/newsletter;
- data warehouses;
- document management systems;
- decision support systems;
- group support systems;
- e-learning;
- content management systems;
- systems for locating knowledge experts;
- artificial intelligence systems.

5. Conclusions

As a result of the conducted research and analyses in the Metropolitan Association of Upper Silesia and Dąbrowa Basin, the following remarks and conclusions have been formulated:

1. As a public organisation, the Metropolitan Association of Upper Silesia and Dąbrowa Basin is responsible for the fulfilment of its statutory tasks. The effectiveness of its operation is determined by the appropriate use of knowledge, which requires the preparation and implementation of a knowledge management system.
2. Based on the conducted study, a research tool, i.e. a questionnaire, has been developed, which enables the assessment of knowledge management in the Metropolitan Association of Upper Silesia and Dąbrowa Basin. The survey facilitates the preparation of appropriate actions to design the concept and development, as well as the implementation, of a knowledge management system in the Metropolitan Association.
3. The questionnaire consists of three categories of questions focused on the issues of knowledge management in the Metropolitan Association of Upper Silesia and Dąbrowa Basin:
 - integrative level,
 - structural level,
 - knowledge processes and tools level.
4. Questionnaire surveys comprehensively covering all organisational entities of the Metropolitan Association of Upper Silesia and Dąbrowa Basin are to determine deficits in knowledge processes and, consequently, to take appropriate measures to improve knowledge management, resulting in higher operational efficiency of the Metropolitan Association.

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