

[DOI: 10.20472/BMC.2016.003.012](https://doi.org/10.20472/BMC.2016.003.012)

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ENTERPRISE MANAGEMENT USING THE SYSTEM OF RATIONALIZATION OF INFORMATION PROCESSES

Abstract:

The paper is aimed at learning and assessing the selected method of rationalization of information processes developed by the manufacturing company, consisting in the identification of structural factors of the information and communication function and the analysis of information processes. In the theoretical part, there has been presented the division of functions of the systems of economic information into basic functions and additional functions and there has been discussed the operation of the Strategic Information System of the company. In the empirical part, using descriptive analysis, there has been presented the method of rationalization of information processes of the manufacturing company operating in Poland, which contributes to the improvement in elementary and repetitive actions in the surveyed manufacturing company.

Keywords:

ENTERPRISE MANAGEMENT, INFORMATION PROCESSES, BUSINESS

JEL Classification: M21, M21

Introduction

The information management process in the enterprise requires efficient functioning of the information system. The decision-making process, i.e. the information and decision-making process consists in processing information into directions for operation¹. The needs for information, depending on management level, differ in terms of their detail, therefore, it is important to create the efficiently functioning system of information flow in the enterprise², organized and coordinated by the appropriate superior level. The information system should be placed in the framework of the integrated systems of enterprise management and continuously provide filtered, qualitatively appropriate and useful information³. The aim of the paper is to explore and assess the selected method of rationalization of information processes implemented by the manufacturing company, consisting in the identification of structural factors of the information and communication function and the analysis of information processes.

I. Strategic Information System of the enterprise

In the subject literature, there are a lot of definitions of the information system. B. Borkowski understands the information system as:

- “informal information system (set of behavior patterns),
- formal information system (principles, rules, official structure of knowledge),
- technical information system, describing the organization of information flow and actions associated with the processing of data essential for the performance of tasks (it is built as the support for the formal information system”⁴.

The process of operation of the enterprise information system is similar to the functioning of business intelligence in the company. In the literature, we come across the functioning of Strategic Information Systems, playing the functions of business intelligence⁵. The process of the functioning of business intelligence along with the functions performed by it is presented in Figure 1.

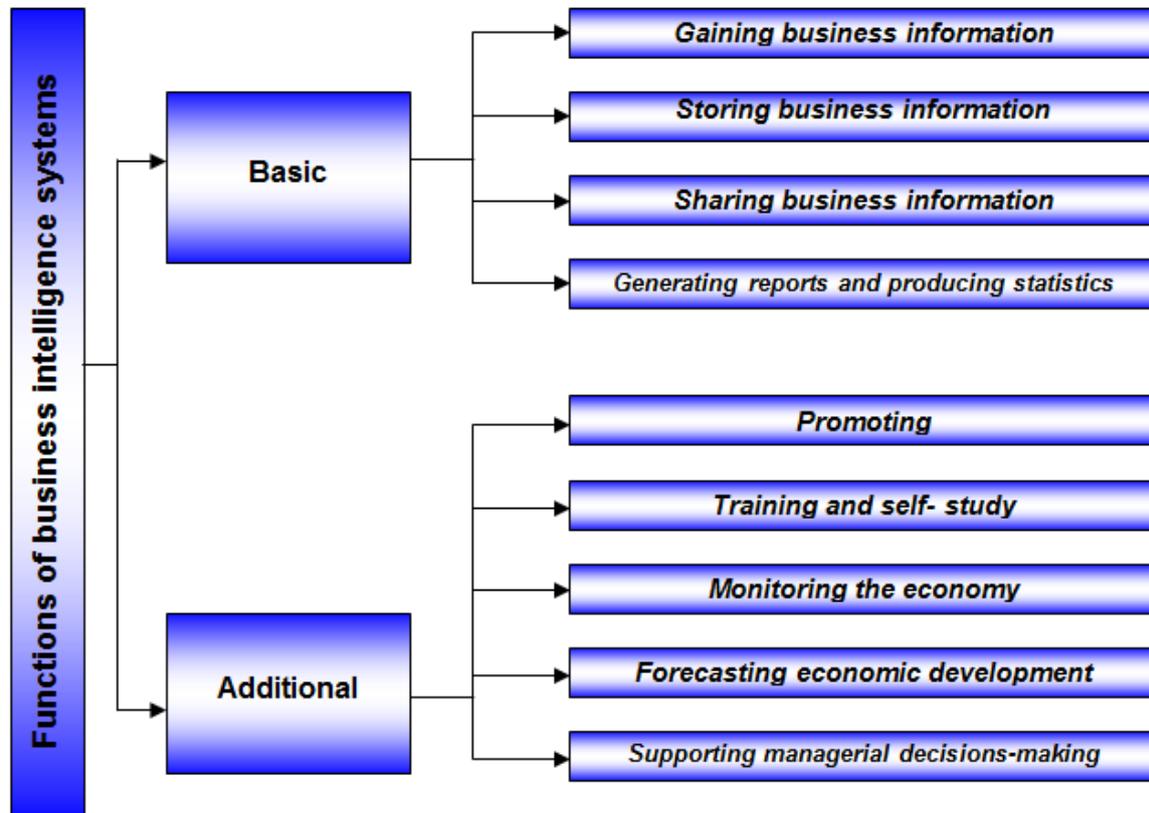
¹ P. F. Drucker, *Praktyka zarządzania*, Biblioteka Nowoczesności, AE Kraków, 1994, pp. 376-377.

² H. Kościelniak, *An Improvement of Information Processes in Enterprises - the Analysis of Sales Profitability in the Manufacturing Company Using ERP Systems*, Polish Journal of Management Studies, Vol.10/2014, pp. 65-72.

³ [Compare:] T. Rojek, *Wartość poznawcza informacji jako strategicznego zasobu w zintegrowanym systemie zarządzania przedsiębiorstwem*, [in:] *Zarządzanie zasobami informacji w przedsiębiorstwie. Ku przedsiębiorstwu przyszłości*, collective work, R. Borowiecki, M. Kwieciński (eds.), Wydawnictwo Naukowo-Techniczne, Warszawa, 2001, p. 183.

⁴ B. Borkowski, *Systemy informacyjne w rolnictwie na potrzeby Wspólnej Polityki Rolnej*, Wyd. SGGW, Warszawa, 2003, p.15, [compare:] P. Beynon-Davies, *Inżynieria systemów informacyjnych*, WNT, Warszawa, 1999, p. 29.

⁵ G. Gierszewska, M. Romanowska, *Analiza strategiczna przedsiębiorstwa*, PWE, Warszawa, 2003, p. 295.

Figure 1. The division of functions of business intelligence systems

Source: Author's own study based on: W. Januszko, *System informacji gospodarczej*, Wydawnictwo SBP, Warszawa, 2001, pp. 75-82.

G. K. Świdarska states that that Strategic Information System is to gather and share information essential for taking repeatable decisions, since unique decisions have unique nature referring to another mode of collecting information, e.g. by employed experts⁶. G. Gierszewska and M. Romanowska present a similar approach. While writing about the construction of business intelligence system, they call it strategic information system⁷. All the listed authors treat the subject which Strategic Information System is to refer to in a similar way, namely, Strategic Information System is to designed exclusively for the needs of repeatable decisions. Before discussing Strategic Information System, it should be specified which decisions are qualified to the group of repeatable decisions. G. K. Świdarska presents the classification of repeatable decisions according to management levels which these decisions refer to:

1. Strategy of the company.
2. Strategy of the sector.

⁶ *Informacja zarządcza w procesie formułowania i realizacji strategii firmy – wyzwanie dla polskich przedsiębiorstw*, collective work, G. K. Świdarska (ed.), Difin, Warszawa, 2003, p. 109.

⁷ G. Gierszewska..., op. cit., p. 295.

3. Functional strategy⁸.

With respect to the above classification, it can be concluded that the decisions taken by the board of directors and top management, referred to as the strategy of the company, relate to its current and future activities, pace of development and shape of the business portfolio. The company portfolio (number of areas where the enterprise conducts its activity), in the course of conducting its activity, is determined by three factors:

- number of sectors (products) provided by the company,
- number of geographical markets of the operation,
- number of supported customer segments⁹.

The decisions concerning the above area are repeatable decisions since, at least once a year, the board of directors and top management must express their opinion on the future activity of the company. Another type of repeatable decisions concerning the sector strategy is taken by the management of the high and middle level and refers to detailing the parameters of the offered products/services, quality, price, planned volume of production and sales, selection of target markets. The most frequently taken decisions, that is, repeatable ones are the decisions taken in the field of the coordination of the performance of the company functions¹⁰.

While defining which decisions are qualified for the group of repeatable decisions, there should be discussed the process of designing Strategic Information System, whose stages are the following:

- specifying repeatable decisions in the field of business portfolio and functions of enterprise management,
- identifying the information demand of decision-makers connected with every type of repeatable decision,
- defining the existing and used sources of information – specifying information supply – along with the detailed description,
- determining new sources of information based on the analysis of information needs and shortages and the present supply,
- combining the exploited and new sources of information into one system supporting decision-making – Strategic Information System¹¹.

The process of designing Strategic Information System serves as the basis for producing information bases depending on the type of repeatable decisions taken. Repeatable decisions in the enterprise are divided into two types. The first type of

⁸ *Informacja zarządcza...*, *op.cit.*, p. 110.

⁹ *Informacja zarządcza...*, *op.cit.*, pp. 110-111.

¹⁰ *Informacja zarządcza...*, *op.cit.*, pp. 110-115.

¹¹ M. Ciecierski, *Identyfikacja potrzeb informacyjnych wywiadu gospodarczego*, [in:] *Informacja i wiedza w zintegrowanym systemie zarządzania*, R. Borowiecki, M. Kwieciński (eds.), Zakamycze, Kraków, 2004 r., p. 375 [after:] G. Gierszewska, M. Romanowska, *Analiza strategiczna przedsiębiorstwa*, PWE, Warszawa, 2003, p. 296.

repeatable decisions are portfolio decisions, which refer to the production and management of business portfolio and are taken by the management of the high and middle level. The other type of repeatable decisions are functional decisions which refer to the decisions associated with specific functions of the company. To enable taking portfolio and functional repeatable decisions, there are created two sets of information:

- information serving portfolio decision-making,
- information serving functional decision-making¹².

In the framework of Strategic Information System, for each group of repeatable decisions and their information sets, there are created subsystems: portfolio and functional. The task of the portfolio subsystem is creating information bases used in taking portfolio decisions. This subsystem consist of the general module of the portfolio and the set of sector modules, blocks and drawers. The general model of the portfolio provides information concerning the portfolio of the enterprise, its directions of development, conducted policy and refer to a longer period of time. Each sector module corresponds with an individual area of the enterprise activity (corresponds with an element of its portfolio) and, in the form of the sector blocks, includes the full information base associated with it. Therefore, at the level below, below each sector module, there are the following sector blocks¹³ along with the drawers:

- the block of the analysis of macro-environment includes the drawers: political, legal, economic, international, social, demographic and technological,
- the block of the analysis of the competitive environment includes the drawers: new competitors, competition inside the sector, substitutes, suppliers, customers,
- the block of the analysis of the position of the company in the sector includes the drawers: market position, position in terms of costs, image of the company, capability to invest, advanced technologies, organization and management¹⁴.

Each of the listed sector drawers is the elementary information unit. The sector drawer contains basic information associated with the specific area in the framework of one sector.

The functional subsystem is aimed at providing information bases for taking repeatable functional decisions. According to G. K. Świdorska, analogically to the portfolio subsystem, the functional subsystem consists of the general functional module which presents the strategy of the company against the background of the performance of strategic functions and functional modules¹⁵. The following functional modules can be identified, along with the functional blocks:

¹² M. Ciecierski..., *op. cit.*, p. 375 [after:] G. Gierszewska, M. Romanowska, *Analiza strategiczna przedsiębiorstwa*, PWE, Warszawa, 2003, p. 296.

¹³ The literature indicates the existence of four sector blocks included in each sector module, however only 3 sector blocks are listed by name.

¹⁴ *Informacja zarządcza...*, *op. cit.*, p. 124.

¹⁵ According to the author, there is a discrepancy and not an analogy. Namely, in the portfolio subsystem, the

- the module of research and development includes the block: technological processes and product development,
- the module of procurement includes the blocks: the range of vertical integration, suppliers and delivery process,
- the module of production includes: production equipment, production process organization,
- the module of marketing and sales includes the blocks: competitive strategy, public relations, distribution, advertising and brand,
- the module of planning and organization of operation includes the blocks: structure, information and decision-making processes and culture,
- the module of finance and accounting includes the blocks: management accounting, financial accounting, tax management and finance management,
- the module of human resources management includes the blocks: human resources planning, staff selection, motivating staff, evaluating personnel and staff turnover¹⁶.

Each functional block consists of functional drawers. Like sector drawers, functional sector drawers constitute the smallest information unit in the functional subsystem.

The structure of Strategic Information System is designed for supplying managers with the information for taking repeatable decisions. However, in the course of the enterprise activity, there occur unique decisions. In such a situation, to make use of some information, it is possible to use the set of Strategic Information System or create an additional set called the Information Base of Unique Decisions-IBUD. The third solution in this situation is using special expertise, prepared for taking the specific decision¹⁷.

Strategic Information System is a complex instrument of modern enterprise management. Strategic Information System includes a wide range of information which serves managerial decision-making. As the name suggests, the system includes strategic information, therefore, it is addressed to users taking such decisions in the company. While taking into account great detail of the information included in Strategic Information System and high costs of maintenance of this system, it seems reasonable to introduce such a system in large enterprises where organizational structure and financial capabilities are significantly developed. In large companies, the decision-making process is very complex and burdened with high risk, therefore, using additional management instruments has significant impact on the decision-making

sector modules are not defined and individual drawers, as the basic information units, are defined and named. On the other hand, in the functional subsystem, the modules are already called since they refer to specific functions of enterprises. In turn, the drawers depend on the activity of the specific enterprise and do not have defined names.

¹⁶ *Informacja zarządcza...*, op. cit., p. 125.

¹⁷ *Informacja...*, op. cit., pp. 108-127.

processes. The disadvantage of Strategic Information System are high costs of implementation. The advantage is the possibility of taking decisions based on detailed database, characterized by high quality and timeliness, which increases opportunities for achieving success by the enterprise.

On account of repeatability of many activities and decisions, in the surveyed company, the decision has been made to implement the method allowing for the automation of the process of collecting information and information flow. Both the participants of information processes, their relationships and the applied methods and techniques of information processing are repeatable, therefore, in the surveyed company, there has been used the method of rationalization of information processes while adjusting it to individual needs of the enterprise to minimize the number of disturbances occurring in these processes of information flow. In response to the needs of the surveyed company, the selected method of rationalization of information processes has been subjected to transformation and used as the method of the analysis of the information system of the manufacturing company.

II. The method of the analysis of the information system of the manufacturing company

The empirical research was conducted on the basis of descriptive analysis of the information obtained from the manufacturing company. In the surveyed company, information systems were applied in the processes of collecting and processing information. The implementation of computer-aided management of communication system in the surveyed company takes place on the basis of the assumptions of the method of rationalization of information processes (analysis of the information system), which concentrates on information and communication processes and their relationships. The method of rationalization of information processes in the surveyed company serves the analysis of information and communication management in technical and organizational terms and refers to four areas:

1. The material area describes the objects and subjects of the system.
2. The functional area includes the goals and tasks performed by the system and the needs essential for the implementation of the intended goals.
3. The technical and technological area specifies technical means and methods applied in the process of information and communication management.
4. The personnel area indicates the topics associated with education and attitudes of employees taking part in information and communication processes¹⁸.

The main tasks of the method of rationalization of information processes in the surveyed company may include specifying the parameters of communication processes, indicating relationships between different attitudes, identifying external and internal information relationships, defining methods and techniques of communication and describing characteristics of information. The tasks of the method of

¹⁸ The information provided by the surveyed company.

rationalization of information processes in the surveyed company are performed at three main levels:

- structural (including the subjects of the structure),
- functional (from the point of view of the performed functions),
- process (considering the existing processes).

The method of rationalization of information processes allows for simultaneous use of the method at different levels of the surveyed company, and the phenomena of information and communication are, most of all, referred to the performed tasks, functions and their relationships. The method is used on the basis of intracellular, intercellular and external processes.

The conduct in the discussed method consists of two stages – identification and analysis. The identification of structural factors of the information and communication function of the surveyed company is the basic task of the first stage at which there takes place the comparison of weak links of the communication system. In the course of carrying out the interview and receiving responses in the questionnaire, there is collected detailed information on the directions, course and participants of communication processes, there are registered relationships occurring in these processes, the applied methods and techniques of processing information etc. The questionnaire consists of a few parts and includes the list of very detailed questions concerning not only the information, communication and disturbances occurring in these processes but also the division of labor, technical equipment and use of labor time. All the collected materials, supplemented in the course of individual talks are subjected to processing and analysis. The collected results present the information and communication function of the enterprise presented in the form of diagrams and networks of communication relationships.

The analysis of the processes and searching for the possibilities of their improvement is the second stage of the method of rationalization of information processes. It consists in choosing input and output information of elementary tasks from among basic processes and tasks associated with the performance of the function of the enterprise. There are indicated critical actions affecting information flow and there is conducted the research in the field of duties assigned to the specific position. The second stage of the method of rationalization of information processes in the surveyed company consists of five stages. The first stage consists in the organizational preparation of the research and interviews with the management – on the basis of this interview, there is obtained information on the internal construction of the organizational structure and its relationships, performed partial tasks and using opportunities provided by technology at work. The second stage is conducting interviews with employees. This stage provides information on partial tasks and, isolated in their framework, elementary tasks and relationships between different positions.

In the third stage, there is the registration of results and possible supplementation of interviews – the collected data are subjected to recording and grouping with reference to the occupied position. Moreover, there will be indicated information and communication courses which are subjected to restructuring and the ones which can be improved immediately. In the fourth stage, there is carried out the assessment of the results and determination of weaknesses of the processes – the analysis and assessment of the results is conducted by comparing the obtained information with the model information. The research conducted from the end (the analysis of the result which the information is) to the beginning (through the analysis of elementary tasks) allows to define and eliminate unnecessary or double tasks, unnecessary documents, information and entities generating them. The indication of weaknesses described above is usually commissioned to external experts. The last, fifth stage is the formulation of the propositions for improvements and simulation of the effects of changes – on the basis of the determined weaknesses there takes place the construction of propositions for improvements, which are simultaneously tested through stimulation. In this way, the aim is to select the optimal solution¹⁹.

While assessing the method of rationalization of information processes in the surveyed company, it should be concluded that it contributes to the improvement in elementary and repeatable operations and thereby reducing the time of the process of information flow in spite of the fact that it does not introduce a new solution or a way of conduct. The method of rationalization of information processes in the surveyed company allows for the identification of areas requiring improvements and enables the testing of effectiveness of new solutions. The advantage of the application of the method of rationalization of information processes in the surveyed company is combining the information and communication function with dependencies of the organizational structure of the surveyed company.

Conclusions

The aim of the paper has been to explore and assess the selected method of rationalization of information processes introduced by the manufacturing company in Poland, consisting in the identification of structural factors of the information and communication function and the analysis of information processes. The aim of the paper has been achieved in the empirical research, conducted on the basis of descriptive analysis of the information obtained from the manufacturing company. Using the method of rationalization of information processes, there has been conducted the review of repeatable operations in the field of processes of collecting and processing information. The implementation of rationalization of information processes contributes to the improvement in elementary operations, repeatable ones and, consequently, reducing the time of the process of information flow.

¹⁹ The information provided by the surveyed company.

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