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# Hybridization in Network Management

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# **BUILDING AN INFORMATION MANAGEMENT SYSTEM IN A MULTIDIVISIONAL CORPORATION – AN ANALYSIS OF MANAGEMENT PERSONNEL'S AWARENESS OF INFORMATION NEEDS (CASE STUDY)**

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## **ABSTRACT**

The authors, taking part in the process of a deep transformation of the information management system in one of the largest companies in the Polish energy sector, conducted research into the information needs of the management team. The aim of this research was the design and implementation of a new, specially tailored, System of Information Management (SIM). In the process of carrying out this research, the authors observed a range of phenomena which in their opinion determine the effectiveness of this kind of operation.

**Keywords:** key performance indicators (KPI), dashboards, balanced scorecard (BSC), strategic management, information management

## **INTRODUCTION**

In contemporary businesses information is ceasing to be just information and to an increasing degree should be treated as a resource. As with every other resource, whether employees, machines, buildings or land, information should also give added value to the business. Which means that the cost of gaining information should be lower than the value resulting from decisions which are based on it. This is analogical to the rationality of

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decisions in relation to the broad understanding of trade activity, where the weighted average cost of capital (WACC) should be lower than the estimated level of returns – the anticipated effects of investment activity.

It is nevertheless worth noting that the value of information may change over time. Some information goes out of date, some information becomes less significant while other information becomes more so and, as a result of changing conditions, some information may even lead managers into error. Changing circumstances create new informational needs. The changing value of information over time therefore determines how one should approach the building of an information management system and the maintenance of its effectiveness as a support for managerial decisions. Awareness of this state of affairs should encourage cyclical verification of a management information system and its adaptation to current and predicted conditions: market, organisational, technological and social.

Neglecting to act in this field may sooner or later lead to serious disruption in business processes. The scale of the problem is largely dependent on the size of the business and the number of processes realised. This risk therefore mainly concerns large corporations, where the scale of activity and the number of resources involved seriously limit the possibility of a quick reaction to changes in factors determining the quality of information.

## **1. RESEARCH METHODOLOGY FOR THE IDENTIFICATION OF MANAGERIAL NEEDS REGARDING THE DESIRED RANGE AND STRUCTURE OF INFORMATION MANAGEMENT**

The research which was carried out for the purposes of the present article took place in one of the largest state-funded national companies, with a long-standing presence on the market, as well as being a subsidiary of a holding company consisting of more than 30 subsidiaries. The purpose of the research was to determine the level of management expertise in understanding the significance of management information and its elements, serving to optimize the processes of management decision making. The research results described in this article offer an empirical example of managers' lack of understanding of information needs, as well as highlighting gaps in their knowledge of optimal decision making, including those decisions involving operational aspects of the functioning of strategic business units in a corporation. Given the sensitivity of these results, the authors of the article have chosen not to name the company where the research took place, instead identifying only the sector in which the company functions, which is broadly speaking the energy industry.

The research was carried out in 2017, so the results are current. Due to the very considerable efforts made in the research to include results from managers in a variety of fields, one can treat the results as comparatively representative, reflecting also the state of knowledge and level of expectations with regard to management information systems in other large Polish multi-branch enterprises.

This research has international value insofar that, in the context of the free flow of work resulting from the ongoing processes of globalisation, Poland is a member of the European Union and Polish trade is evolving dynamically in the international arena (USA and far eastern nations).

## 2. RESEARCH TRIAL – MANAGEMENT PERSONNEL IN A MULTI-BRANCH CORPORATION

With the aim of defining initial needs for management information management at different levels, a survey was conducted in which a questionnaire was sent out to 667 members of middle and senior management. This population (a full sample, that is all managers of the corporation) consisted of managers working both at the level of central organisation and in seventeen of its departments, and also in more than 170 branch offices from the lowest (III) level. The total number of employees in the corporation amounted to more than 11000 people, therefore the survey included more than 6% of all employees. Considering their positions in the organisation, as well as internal diversity with regard to competences, skills and knowledge, and those factors which determine that diversity, such as level of education, or professional experience – the test group is representative, and the conclusions which the authors draw from the research can be considered valid in the broader context.

The tests were conducted in three rounds, with the help of a survey in electronic format, in which managers of various levels of seniority were asked about proposed names of indicators and the methods for their calculation (formulae). These indicators, according to previously made explanations, were to be displayed on the managerial cockpit, dedicated to the specific areas of the units of the business corporation, i.e. for the owners of processes and mega-processes (in other words, middle and senior management).

The conducting of the above mentioned three rounds of questionnaires arose from the necessity to get the largest possible percentage of responses from Central Office (Department of Corporate Strategy) to the questions posed. In the event, 477 employees completed the questionnaire, which represented almost 72% of the total of questionnaires sent out. After consultation with company management, the authors decided that the level of responses was sufficient in order to identify managerial needs regarding the range and structure of managerial information which was to be the subject of the cyclical report on the so-called managerial cockpit. Over the next two months of processing the acquired data, the authors of the study ran management workshops with the respondents during which, through a process of formal and informal direct interviews, clarifications were provided on the earlier stage of responses. These workshops were combined with process mapping in the business units of the corporation, thanks to which added value was achieved through updated process mapping of the organisation. It is also worth mentioning that there already existed a developed (though not yet including all levels) system of management by objectives (MBO)<sup>1</sup>, based on the organisation's process evolution. Very generally speaking, it should be noted that the practical idea of management within the corporation was based on a balanced scorecard (BSC)<sup>2</sup> template, in which owner and business aims (MBO) were given detailed support by:

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<sup>1</sup> Drucker, Peter. 1954. *The practice of management*, New York: Harper & Row; Thompson, Kenneth R. and Luthans, Fred. and Terpening, Willbann D. 1981. *The Effects of MBO on Performance and Satisfaction in a Public Sector Organization*, Journal of Management 7:1, pp. 53-68.

<sup>2</sup> Kaplan, Robert S. and Norton, David P. 1996. *Using the Balanced Scorecard as a Strategic Management System*, Harvard Business Review, January-February 1996, pp. 37-47.

- key performance indicators (KPI).
- project management (PM)<sup>3</sup>.

The authors of the research also initially estimated that the recipients of the indicators contained in the managerial cockpit would ideally number more than 800 corporation employees. Approximate estimates also suggested that these indicators would ultimately be grouped into 42 different cockpits, i.e. one type of cockpit for company head office, 19 types of cockpit for higher ranking (II) local branches, and as many as 22 different types of cockpit for the lowest level (III) local branches in the corporate structure.

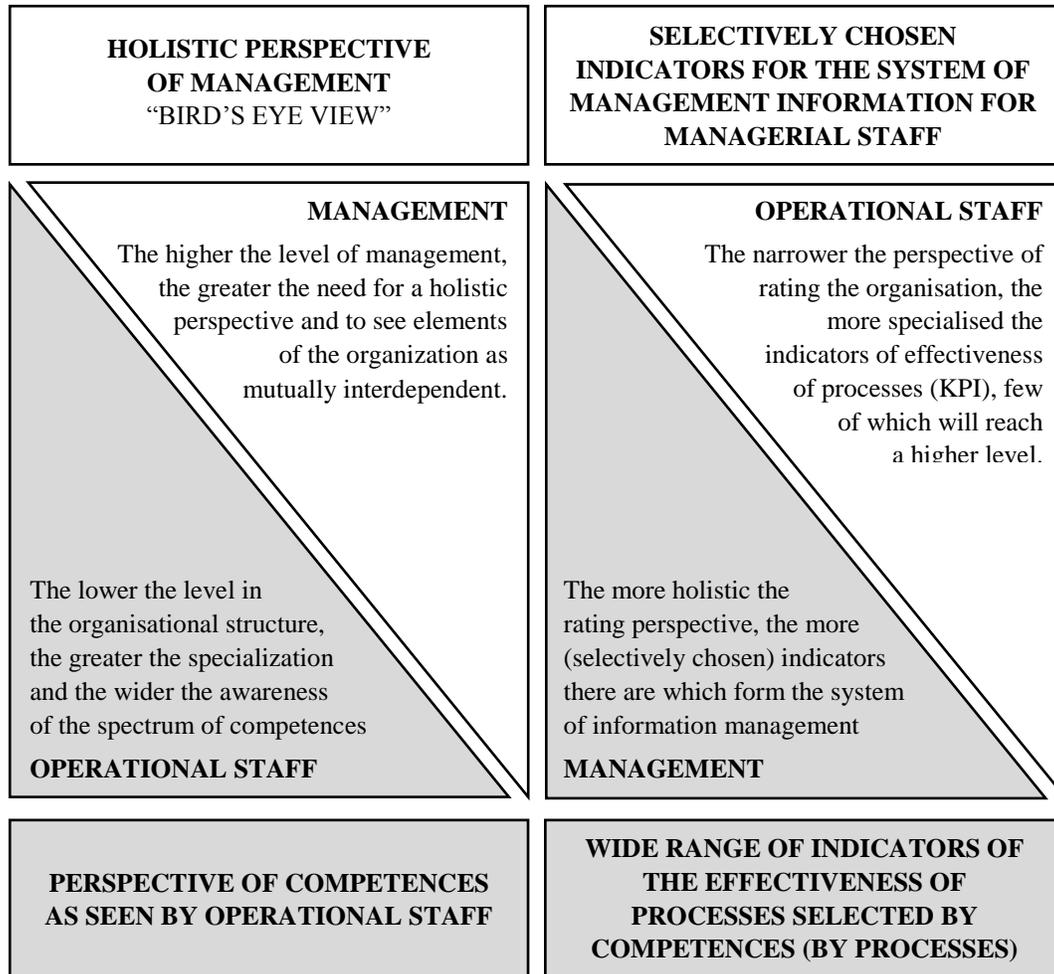
### **3. EMPIRICAL RESEARCH RESULTS FROM MANAGEMENT STAFF IN THE STRUCTURALLY COMPLEX MULTIDIVISIONAL CORPORATION**

The structure of the 42 identified various types of managerial cockpit which had to be operationally implemented in a responsive IT environment (available on mobile devices and also on managers' laptops) illustrated to some extent the level of detailed management information in a multi-level and structurally complex organisation. The lower the level of management information generated (III level – branch offices), the larger the substantive content range of managerial cockpits (i.e. the target of 22 types of indicator catalogues). On level II – local offices described as 'departments' – the span range of management information produced was to be contained in 19 homogenous types of cockpit, which resulted not so much from the complexity and dissimilarity of this group of indicators, as from the necessity of their division into geographical regions in Poland, encompassing the operational area of particular corporation departments. And finally the most synthesized level of data, collected from the bottom-up, was meant to be worked out (OPR - one page report) on the consolidated managerial cockpit dedicated to the management of company headquarters, and also to the representatives of its departments and offices. This cascading 'funnel' structure maps the procedural approach to corporation management, the general form of which is illustrated in Image 1.

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<sup>3</sup> Antonowicz, Paweł. and Skrzyniarz, Piotr. 2016. *Construction of management information system versus barriers in Key Performance Indicators identifying process*, Journal of Management and Finance, Vol. 14, No. 4/2016, pp. 303-313.

**Image 1.** Process dimension of the corporation and range of management information determined by level of detail and measurement (KPI)



Source: own material.

As a result of the three rounds of questionnaire conducted, and also based on the results from the management workshops, from a total 281 proposed indicators the authors selected 176 which were recommended for implementation on the managerial cockpit. These measures were assigned the following attributes:

- Characteristics relating to main mega-processes / processes – and also aims of processes – an attribute showing the placement of the indicator (KPI) on the corporation’s process map.
- Proposed name of the indicator – as precise as possible an identification for the indicator, allowing users to understand intuitively its meaning and content.

- Description and example of the indicator – a valid algorithm for calculating the indicator.
- Desired value – range of variation of the indicator, and also its acceptable deviation, if it could be established.
- Exceptions – i.e. situations in which an authorised person is allowed to eliminate exceptional results in order to avoid generating so-called false alarms.
- Indicator data source – often non-homogenous in the various ICT systems of the various departments of the corporation, providing applied database solutions.
- Interval measure – that is, the suggested data refresh / update time on the managerial cockpit.
- Form of presentation and commentary – the form of the process owner's presentation of a given indicator, arising from either his/her habits and typical presentation schemes, or from anticipated ideas on his or her graphic visualisation.

The operational problem with which the authors were faced was described in point (f) attribute: the identification of indicators in source form, from which data can be drawn for summation and visualisation on the managerial cockpit. It turned out to be the case, after more rigorous investigation, that more than 350 various types of ICT systems / programs / applications function in the corporation. These either had an active status or were ready to be withdrawn or standardised. This constituted a focus for strategic change in the process of building a coherent corporation support system through an integrated ICT environment.

#### **4. MAIN PROBLEMS DURING THE IMPLEMENTATION OF A UNIFIED AND INTEGRATED SYSTEM OF INFORMATION MANAGEMENT – CASE STUDY**

In contemporary companies information is communicated largely through the medium of IT, which gives an impression of objectivity. This objectivity is however highly illusionary because both at the starting point where solutions are powered on the basis of information, and at the point of exit where the interpretation of that information is formed, a highly subjective factor is decisive, namely people. This subjectivity determines a whole rank of limitations which cast doubt on the possibility of obtaining fully objective information. These research results and also the authors' observations allow us to highlight some of the phenomena which are worth taking into consideration when designing and implementing solutions in the field of information management and in other structurally complex corporations.

##### **4.1. RELUCTANCE OF MANAGERIAL STAFF TO ACQUIRE AND PRESENT NEW, ADDITIONAL MANAGEMENT INFORMATION**

The basis of resistance to the acquisition and presentation of new fields of information management was the derived perception of these changes as a threat to the interests of the individual employee. Among the motives which contributed to this behaviour, it was possible to identify three which were dominant.

The first was fear of a negative assessment of the manager's work by his or her superiors, which might lead to the loss of bonuses, position, chances for promotion or being fired. In extreme cases there was also unethical behaviour, when employees used work time and work resources for their own personal ends which were not related to the functioning of the business. In these cases, the motives were strong enough either to persuade workers who felt threatened to actively oppose the changes introduced, or to a more or less active boycott by multiplying problems and barriers, drawing-out the realisation of tasks or a taking a passive and disengaged approach.

A less active form of boycott is when managers and workers avoid or give a lower priority to activities which do not have a direct short-term impact on the effectiveness of their work and therefore on their assessments and earnings. Every change in an organisation, including changes in the information sphere, is treated by managers as a cause for irritation which interferes with the realisation of processes, de-organises work and brings about unnecessary chaos. Such seemingly insignificant determinants, by delaying the process of change, can easily lead to its failure. Additionally, the tendency of managers to build a narration based on exceptions, along the lines of "there's no point in doing that, we tried it once and it didn't work", can enforce the status quo for many years.

It is difficult to call the final factor a 'motive', because the negative attitude to change in information management systems is not based on any real threat or any real loss of benefits. This resistance comes from a fear of change in general, of disruption of automatic functioning and habits, which disrupts the comfort zone of workers. This phenomenon causes relatively little risk to the implementation of a management information system. Nevertheless, it is worth taking it into consideration so as to prevent it from making other risk factors stronger.

All these attitudes and motives have one thing in common, which is that they consider changes in the system of information management only from the perspective of risk, and a fail to consider the opportunities resulting from an objectification of information. This is mainly the result of a lack of knowledge and experience which shows that the more objective the information, the better the chance of taking the correct decision and predicting its results. In this way, the security of the manager is also improved in that he or she is less vulnerable to the subjective opinion of his or her superiors.

## **4.2. THE TENDENCY OF MANAGERIAL STAFF TO FORM TOO WIDE A RANGE OF / TOO MUCH MANAGEMENT INFORMATION**

In the majority of cases this is an effect of linear thinking, which reasons that since information is necessary for taking decisions, the more information the better the decision. Statisticians struggle with this type of problem, when a theoretical model they have created becomes overloaded. This results from, amongst other things, entering too many explanatory variables into the model. In fact, normally the Pareto principle applies in this sphere, determining the most important variables as characterised by the highest level of relevance. Just as the capacity of the stomach is limited and if we eat too much we get indigestion, in the same way human perception is limited and can only absorb and understand a limited amount of information. If there is too much of this information, the capacity for accurate evaluation of a situation and effective decision making declines. This problem is further aggravated by the

tendency for chaotic ‘ad hoc’ production of information in response to short term needs. Such information, produced in various parts of the company and based on varying premises, very often gives different results even when it concerns the same question and can lead managers into error.

One more phenomenon connected with linear thinking and which adds to this problem is the need some managers feel to demonstrate their usefulness and disguise their excess of free time. The result is often a gigantic amount of information which is of no use to anybody. Even though this behaviour will not disappear in particular managers, a systemic solution, based on accepted and logically implemented methodology, should effectively limit such anarchy in the field of management information.

### **4.3. LACK OF KNOWLEDGE AND METHODOLOGY REGARDING THE COLLECTION, PROCESSING AND PRESENTATION OF MANAGEMENT INFORMATION**

A lack of knowledge and methodology when collecting, processing and presenting information is a common factor in a range of other problems which may be encountered during the design and implementation of a system of information management. The failure to take a systematic and methodical approach is very noticeable. What companies take to be methodology is often no more than thoughtless copying of a benchmark, which does not take any account of individual needs and conditions. Among the most common methodological mistakes encountered in research are:

- the failure to concentrate on relevant issues and make effective use of the Pareto principle – for taking key decisions and generating effective outcomes for the company, only a certain portion of information is relevant.
- unconsidered correlations between information – in order to effectively recognise significant economic events and take appropriate decisions, it is not necessary to monitor all possible indicators, it is enough to choose one representative group of indicators which often correlate with one another.
- lack of logically connected information – taking into account the fact that all areas in a company are inter-dependent, individual elements of the system of information management should be logically connected to one another.
- building management information based mainly on ex post (after the event) data and scanty use of feed-forward (based on ex ante (before the event) information) – in a dynamically changing business landscape, reacting only to feedback, which does not allow an adequate response to these changes.

## CONCLUSION

The problem of a lack of a coherent information management system, identified in the strategy of the researched corporation for the next 4 years, was originally meant to be solved through initiating a procedure to design the building of a system of information management. After the diagnosis described in this article of management needs concerning the range and structure of management information desired by the management team, and also after gathering more details through managerial workshops, it became clear that the usefulness of the gathered knowledge is on a very low level. The intention to build a grassroots information management system, based on listening to the needs of managers, could not be realised. In its place there had to appear an autocratically imposed concept of managerial cockpits, the first presentation of which opened the eyes of managerial staff and became the basis for an evolutionary change of previously defensive attitudes. Hiding mistakes, fears about the disclosure of a lack of effectiveness, and reluctance to transfer this information upwards (from local branches to head office of the company), frequent misunderstandings about the concept of organisation assessment, and a lack of necessary maturity in organisational processes, directly placed barriers on the road to rapid and substantive development of objectives for the building of an information management system and its transformation into real IT tools – the managerial cockpit. After several months of conceptual work, market analysis directed at the purchase of information technology and the outsourcing of this service (ultimately there was a decision against the purchase of such IT tools from the market), it was decided to realise the project using a task group consisting of representatives from the Strategy Department and the ICT Department, in cooperation with the Control Department as well as regional branches in a consulting role. A system of managerial cockpits named the Dynamic Data Repository (DDR) was successfully established, the fundamental positive aspects of which led in particular to:

- placing on one platform a database of a required spectrum of management information, and through it access for all employees of the corporation to the so-called DDR address book – making it possible to view the table of contents of currently owned resources in the DDR.
- the registration of authorisations in the specially dedicated corporate environment (in case they needed to be accessed in the future) and also effective management of authorisations at the level of the MS SharePoint platform.
- the achievement of coherence of data, exploited in contact with internal corporation stakeholders, which previously had not been possible because of the wide range of activities of the organisation. Specifically this was thanks to the implementation of the President of the Board’s regulation: “The politics of the production and circulation of management information in the corporation” which caused the DDR to become the single source of management information for the company.
- the reduction of situations in which the same data was acquired from company headquarters through various channels by different branches – often from the same branches but also from others, which as a result created problems with the coherence of data (not to mention the other costs generated through the unnecessary duplication of work).

The problems presented here by that authors are only a small sample of a wide spectrum of behaviour and motivation amongst managers during the design and implementation or improvement of a system of information management. While effective use of this material always demands an individual approach and it is not possible to express such complex issues in a single, objective algorithm, the same feeling of threat that may be present during the process of implementation allows for the improvement of its methodology and the mitigation of risk through pre-emptive action.

## **Participants**

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## **REFERENCES**

Antonowicz, Paweł. and Skrzyniarz, Piotr. 2016. *Construction of management information system versus barriers in Key Performance Indicators identifying process*, Journal of Management and Finance, Vol. 14, No. 4/2016.

Drucker, Peter. 1954. *The practice of management*, New York: Harper & Row.

Kaplan, Robert S. and Norton, David P. 1996. *Using the Balanced Scorecard as a Strategic Management System*, Harvard Business Review, January-February 1996.

Thompson, Kenneth R. and Luthans, Fred. and Terpening, Willbann D. 1981. *The Effects of MBO on Performance and Satisfaction in a Public Sector Organization*, Journal of Management 7:1.