

# CONCEPT OF MANAGERIAL TOOLS BASED ON THE SYSTEM OF ORGANIZATIONAL TERMS

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**Summary:** This paper concerns methodological and theoretical perspective of performing research in the management science. There are main problems and obstacle in the methodology of this science, a description of the system of organizational terms made up by the author and a presentation of an approach to managerial tools based on this system. The tools are planned to gather data about managers' work and allow to recognize patterns in this activity.

**Keywords:** methodology of the management science, the system of organizational terms, managerial tools, methods, techniques, pattern recognition

## 1. Introduction

In the last few years there were many papers describing problems and obstacles in the management science. As a result of theoretical studies there has been created the system of organizational terms and a concept of managerial tools used for doing empirical research.

In the paper there is a description of this concept. The aims of the article are:

- present main problems and obstacles in the management science,
- describe a concept of the system of organizational terms,
- show possibilities of using special managerial tool in doing research and recognizing patterns of managers' work.

## 2. The origin of knowledge in the management science

### 2.1. Main scientific problems

What are the main scientific problems in the management science? Many authors give several reasons that the management science is not being done properly. After theoretical studies it is able to point three main issues which could cause obstacles in developing knowledge.

First of them is the fact that most of research are made by surveys. The results of such investigations are based on opinions of interviewees. There is a deep gap between a view what and how something really happened and the description of this event. D. Deutsch claims that many scientific theories are going to be only a set of statements which consist of interviewees opinions about facts instead of statements about facts [1].

It seems that in the management science the origin of knowledge becomes just from human senses, which are represented, taking into consideration a technical point of view, by empirical research. What is more interesting, knowledge is being developed by surveying participants of organizations and gathering their opinions about facts in the organizational reality. That is why the management sciences has a noisy human "buffer" on

the way between the real world and its scientific description.

Additionally management studies sometimes seem to be charts of some data. Either they are represented by numbers or by descriptive statements. The reason for this result is a type of research tools. They are surveys.

Second problem, which is very often pointed by authors, derives from different methods of research. This way of conducting research is, of course, not a real trouble. However, there are no established relations between different method. So that it is difficult to compare results of several research attempts.

In E. Masłyk-Musiał's paper we can find sentences which she based on A Koźmiński's opinions. The main point is that the development of management sciences is becoming more and more disturbed by no-existing one representative system of terms and a complex of methods used for exploring management environment [2]. The reason for that is building statements based on incomparable data, which were collected by different methods. What is more important, the statements are formed in different languages without taking into consideration importance of appropriate terms represented by words [2].

Ł. Sułkowski claims that „...theories, scientific concepts and practical management methods do not create one cohesive perspective of knowledge but a blend of different approaches” [3].

The third obstacle in performing scientific research, which is often mentioned in scientific papers, is the fact that most of research attempts are incidental. There is no real time perspective. E. Masłyk-Musiał wrote courageous and controversial argument that the strength of the management science becomes from its diversity. She claimed that sophisticated problems in organizations should be solve by many methods and they should be described from different points of view [4]. The author of this paper is not fully convinced to such an attitude to knowledge development. This can be an advantage in an academic discussion but not in building a cohesive system of laws and theories.

This diversity unfortunately does not mean a development of knowledge in a function of time. There is a great need to conduct longitude research attempts as it usually happens in psychology or sociology. Nevertheless, the attention of scientists is focused rather on one-shot views of the research problem than comparing results in a long period of time.

## **2.2. What is possible to know about the management environment**

William Petty said hundred years ago „Making politics without knowledge of measures, a structure and features of society is as superficial as practices of charlatans and wizards” [5]. When we change the word “politics” into “management” and “a society” into “an organization”, it is easy to see troubles in managements sciences.

One of the approaches to creating theories in management science we can find in papers of D.A. Shepherd and K.M. Sutcliffe. In their opinion all the work on any theory starts from studying literature as previous research. This knowledge is being criticized and transformed in a researcher's mind in order to change into theoretical representation of the real world. Afterwards this scheme is going to be developed by new factors, previous research effects or researcher's intuition. A new theory emerges as the result of this process [6].

The procedure of creating new theories is shown in the figure 1.

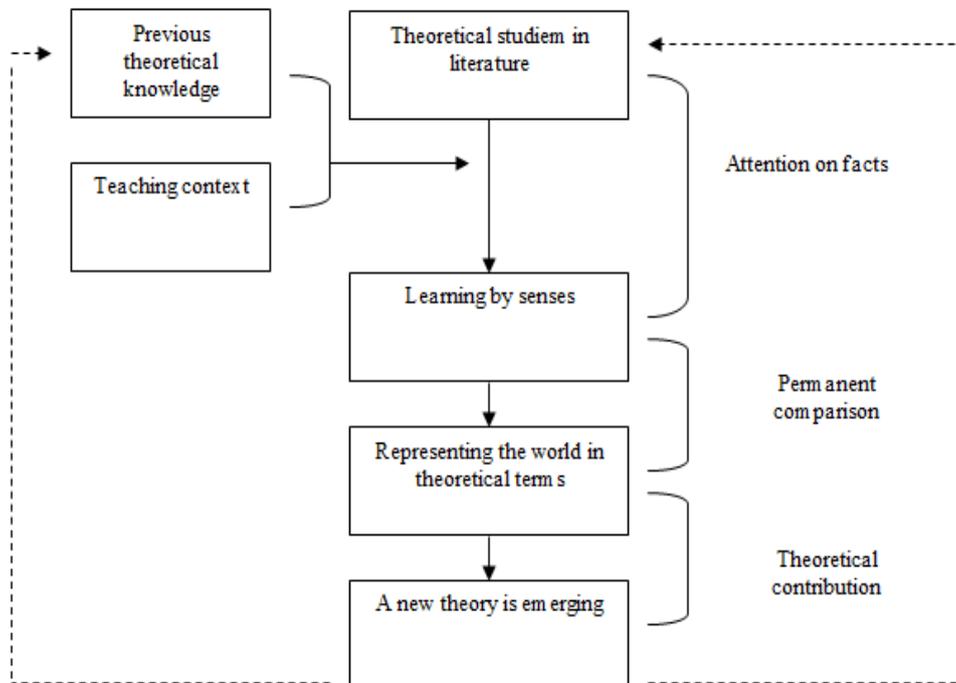


Figure 1. Creating theories in the management sciences [5]

When we get known processes shown in the figure 1, it is understand the question which D. Deutsch asked: is the structure of reality always unified and understood for researchers?" [7].

Another approach to creating knowledge in the management science is the conception presented by E. Boxenbaum, L. Rouleau. This approach consists of several methods mixed with each other. The scheme of this way of creating knowledge is shown in the figure 2.

If we go back to Petty's words, an interpretation of them is given in a lecture of A. Koźmiński and A. Zawiślak. Their two-role book written 30 years ago shows that a society and an organization are very similar. The authors wrote that "management processes are always being held in a social structure which creates its content (...)" [9].

R. House asks some questions about the future of management sciences. The first question is essential and it concerns minimal requirements to the management science so that this knowledge would be able to be called "scientific". The second question is about differences between utility and reliability of theories in the management science. As an ideal object there could be taken physics. The third question concerns practical requirements in the management science. There is also an additional issue about what way the empirical research influence theoretical background of the management science [10]. It is necessary to admit, that R. House does not answer these questions.

A. Koźmiński and D. Latusek-Jurczak draw attention to the point that the management science, such as many social sciences, has many different paradigms and there is a possibility of different points of view on the phenomena [11].

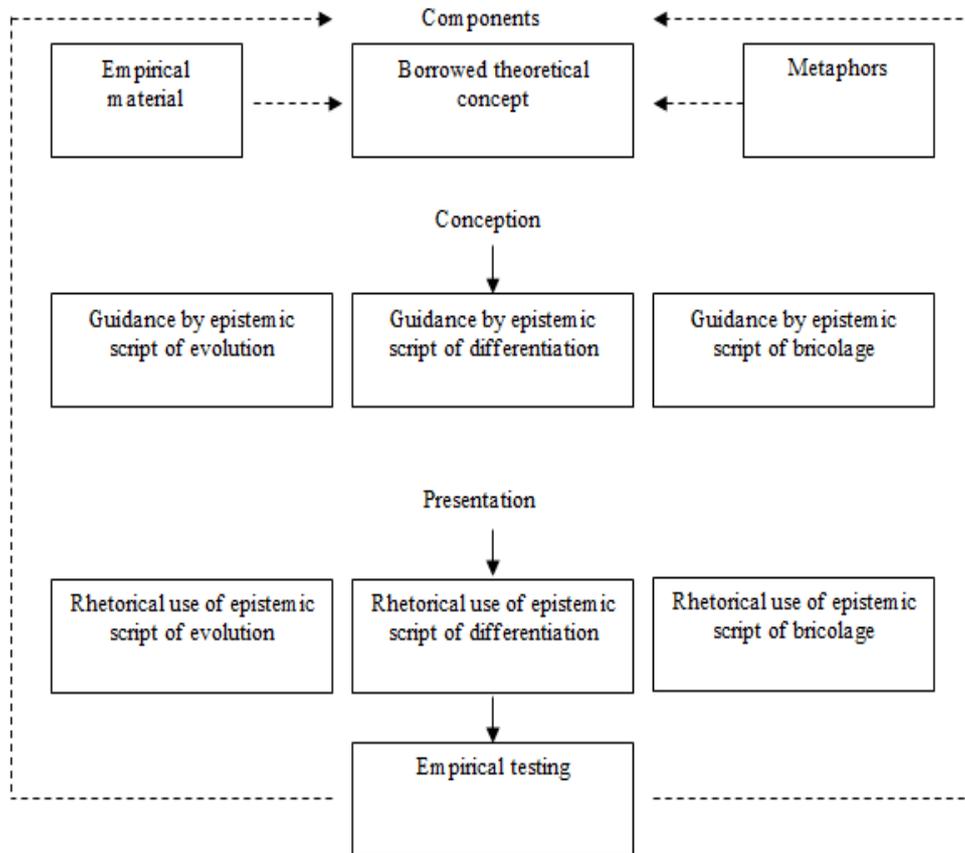


Figure 2. Mixed methods of creating knowledge [8]

## 2. The system of organizational terms

### 2.1. Theoretical assumptions

As it was mentioned, knowledge in the management science is not well structured and there is a lack of checked frameworks of methodology defining how to capture knowledge, then how to classify it, how to develop ontologies and create knowledge packages for the future cases [12]. However, organizations, which are being researched among management studies, are very difficult to focus on by the typical ways of investigating. The organization, especially the work of a manager and its subordinates, can hardly be captured because of cultural, linguistic, and structural features [13].

If we want to create a possibility of measuring phenomena in organization in better way than it is being done nowadays it seems to be necessary to build a new ontological system. It could be a center of focusing by epistemic approaches. A lack of such a theoretical solution causes troubles during making comparisons data and verifying scientific

statements [14]. As it was mentioned above there is a continuous process of making the management science more and more subjective.

In some extent it leads to limitation of abilities of theoretical discussions because when we do not have understandable standards and a shared ontology any of arguments could influence on reasoning in different ways [15]. There are many phenomena in management and managers operate with their subordinates mostly based on intuition disregarding empirical scientific background. Complex pattern recognition of users' actions and feelings could be the future way of managing any organization.

As the author has already mentioned in his previous works, there is a strong need of creating the system of organizational terms [14]. The ontology is based on a formal logic and L. Wittgenstein's theory of facts which on his opinion were the essence of the world. Among management phenomena we distinguish four types of facts: objective vs. subjective resources (things) and objective vs subjective processes (events).

The division of facts is shown in the figure 3.

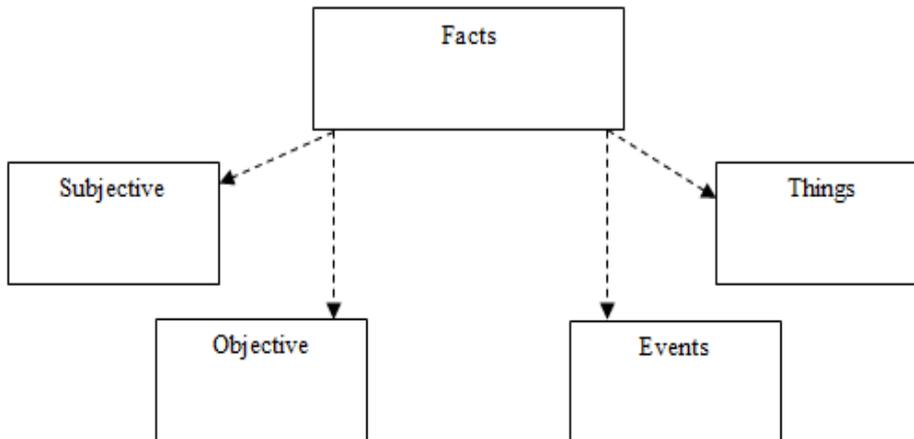


Figure 3. Division of facts [16]

When we understand what is the essence of the ontological background, we can ask how the facts are happening in time?

It is possible to make a short model of how the facts happen one after another. To make the example easier to understand in the figure 4 there is a pattern of facts without distinguish them into subjective or objective. The figure shows that an event 1.1 causes a thing 1.1, which releases an event 2.1 creating a thing 2.1. Meanwhile the thing 1.1 starts an event 3.1. which creates a thing 3.1. After that the thing generates a new version of the first event – the event 1.2. This build a new version of the first thing, which is called the thing 1.2. And so on.

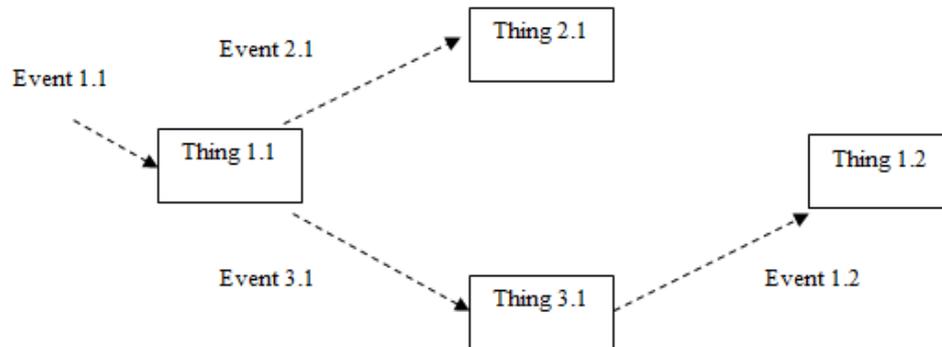


Figure 4. Pattern of facts [16]

## 2.2. Planning described by facts

When we go back to the field of management, there is a question: how managing looks like when we try to describe it by facts? As an example of such a process there will be described planning.

In the traditional approach planning is the first function of management. In most coursebooks in management there are descriptions of a planning process, enumerated sorts of plans, conditions in successful planning. All these things are usually a content of first chapters. Planning is being seen sometimes only as a process [17]. The other writers treat it as a pack of making preparing schedules and pointing goals [18].

H. Bieniok defines planning as a „pointing goals and describing efficient and adequate (...) means of obtaining goals” [18]. Stoner and Wankel claims that at the beginning a manager must do a plan (or several plans), which are connected with goals and tasks: what, when, how and who has to do that [19].

In the literature there are some reckonings that planning should derive from a company’s mission and its strategic goals. This attitude makes planning more stable and not so flexible [20]. However, there is a rule of planning which implies to adapt a plan to circumstances, such a view must cause repeatable obstacles when looking for new ideas or solutions [18].

Additional disadvantage of traditional planning is a lack of easiness, improvisations and “growing up” ideas. At the same time any mistakes are punished. G. Hamel and B. Breen say that in the opposite attitude the mistakes are „positive mutations” which may lead the organization in the future to new products and services [21].

To summarize, planning is focused on projecting a way to goals in the stable and predictable future. However, this process consists of three subprocesses: setting goals, describing tasks and making timetables (plans). We can point three events: setting, describing and making. As results of them are facts: a goal, a task and a plan. They may appear in plural. The pattern of such events and things is shown in the figure 5.

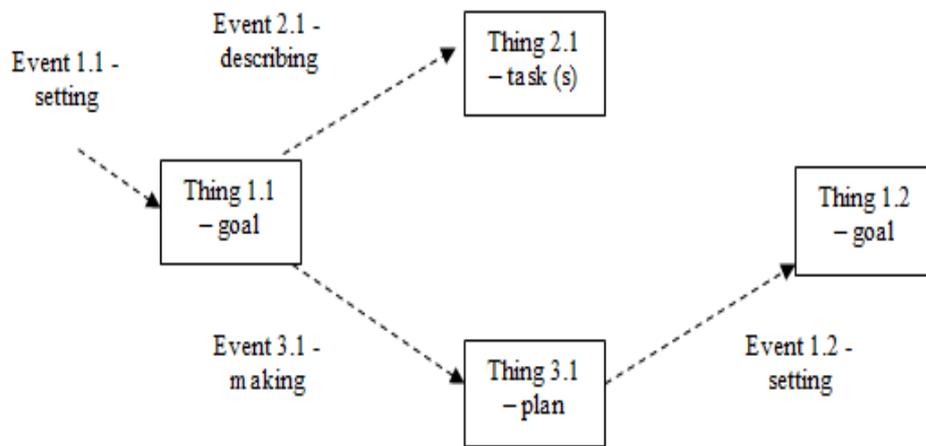


Figure 5. Pattern of facts in planning

### 3. Managerial tools

#### 3.1. A concept of fact measuring

Until now there are many information systems for knowledge management focusing on some fields of an organization like sale, distribution, production [12].

Despite this fact, there is a lack of complex systems of tools for using management techniques and collecting data for enhancing knowledge about an organization. For example, there are installed planners for managers which are able to help them to coordinate work of their teams, but they usually do not exchange data with other tools in an organization.

The system of organizational terms, mentioned in the previous works of the author, allows to detect actions and feelings of a manager and its subordinates in an organization by using online management tools, recording information about actions and feelings as numeric data, recognizing patterns of users' actions and feelings, and finally, generating automatically some prompts and advice for users. The concept is shown in Figure 6.

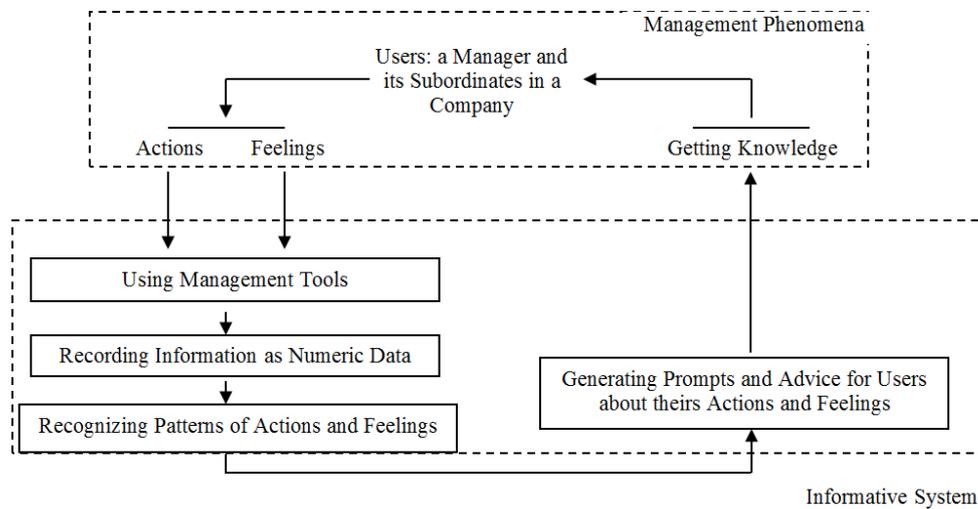


Figure 6. The whole chain leading to generating prompts and advice for users based on the system of organizational terms

In most sciences there is a permanent conflict between entirety and rigorousness [22]. In management sciences such terms as a social capital, talent management or entrepreneurship are in the contrary to the Taylor's rule which was to recollect an object into pieces, let them develop and then again put them together.

In the case of the management science the reality means the organizational reality, which is only a part of the whole world. This question is: is it possible to measure relations between all facts in management by mathematics? First and introductory answer is: yes. But why?

If mathematics – which we can understand as the most unified and simple representation of the world – is able to be the structure of the world, why it should not be a structure in the world of organizations? Why the organizational reality is not mathematical? Further question can be spoken: if it is not so, why the organizations would be objects not from this real worlds?

### 3.2. A concept of managerial tools

Before presenting detailed assumptions of such tools it is necessary to return to the case of managerial work. In the literature there are opinions that a manager works by methods and techniques. The method is defined as a systematic process built by several steps. They are aimed on solving a specific problem in management environment. The techniques is a way in which a manager uses tools (instruments) during the method [23]. A tool or an instrument is defined as a thing which is indispensable in performing in order to obtain a certain goal [24].

We can draw a conclusion that if a manager wants to act successfully, it should use methods, then techniques and certain tools. Assuming that, we can define a managerial tool as an instrument which is simple or complex which let a manager perform. The instrument may be real (a sheet of paper, a table) or virtual (a software) [25].

Taking into consideration definitions mentioned above and J. Penc's opinion, it is possible to assume that a manager can use different techniques within one method. And what is more important, a manager can use different tools within one technique. In the previous papers of the author it was claimed that this managerial tool can be separated from a human being, especially from a manager. The tool is independent being, which has to be operated according to some algorithms and it help to perform one of the main function of management. The manager does not have to exist. Even then the tool will last in a certain state which can be named as a version [25].

Returning to the figures 5 and the figure 6 there is a question, which of the facts are able to be measured by the managerial tools. In the author's concept it is able to measure directly only facts which are represented by things. That is why in the system of organizational terms they are called primary terms. On the other hand, secondary terms – events – are able to be estimated indirectly. It is able to draw conclusions about them by changes of primary terms (things).

There are also two more prepositions. The first of them concerns important features of the thing. The managerial tool should cover all essential features which could describe the thing. The second preposition is focused on tool's users. The tool should be as simple as it is possible. Users should want to use them during the research.

The concept of tools (indicated by grey background) is shown in Figure 7.

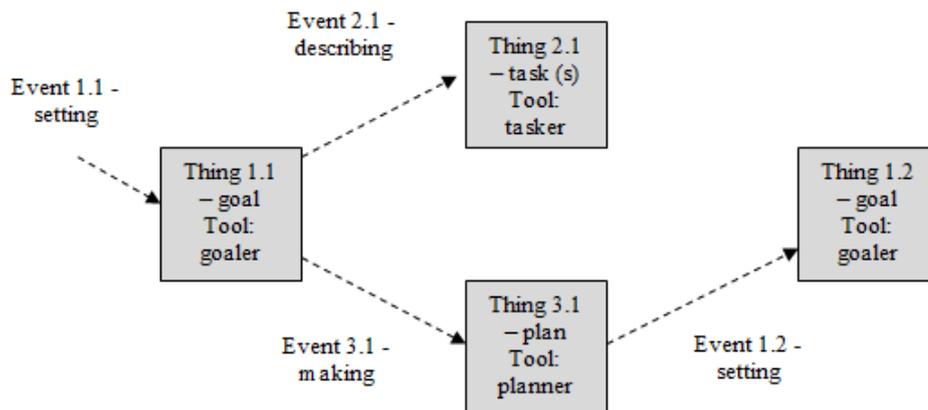


Figure 7. Concept of tools

#### 4. Conclusions

The concept of the system of organizational terms and following them managerial tools gives an opportunity to measure phenomena in the management science differently than it is done usually. When these words were written three managerial tools were being built: a goaler, a tasker and a planner. This stage of the research consisted of: projecting in details how every tool should be used, describing parameters which are going to be measured to do a pattern recognition, establishing correlations between parameters, planning the visual interface of the tools, programming with www technology (php, sql, java) prototypes of the

tools, implementing the mechanism of pattern recognition in managers' activities, testing the tools as prototypes.

In the stage the tools will be used by the users in a company. Users' actions recorded by tools allow to recognize patterns and generate knowledge for users. This recognition will be performed with statistical algorithms.

Building managerial tools based on the system of organizational terms allows to make research phenomena in the management science as well as implemented automatic pattern recognition techniques. Then a quantitative analysis of parameters coming out of the management science model will be assessed.

Concluding a description of the concept of managerial tools based on the system of organizational terms it is worth indicating two main areas of using it. S. Sudoł wrote that the main role of any science, especially the management science, is to help people to foresee the future in an organization. Another role is to determine practical rules and ways of actions [26]. So first, a manager can coordinate subordinates' work using these tools. Second, the informative system records any piece of information on input to the system (directly and indirectly) and let recognize patterns of organizational behaviors. Then new knowledge can be formed and send to the system's users. For this application domain known pattern recognition techniques like Artificial Neural Networks or Bayes Classifier are usually applied.

In contrast to the state of the art the goal of this concept is to perform comprehensive, quantitative evaluation of managers' work.

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