

Creative management decision drivers on sustainable development

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Abstract. The article defines the main stages of management's automation development issues and presents their periodization. The works of the classics of modern management as Peter F. Drucker, Henry Ford, and other authors is critically comprehended on the subject of their opinion about the management's automation process. Based on the analysis, it was concluded that the classics were generally positive about automation and computerization of management. The study aims to conduct a theoretical analysis of classical works in the field of management for their attitude to the automation of the management process. The research methods are the method of theoretical analysis and the method of induction. However, taking into account the specifics of modern automation aimed at total algorithmization (computerization) of all business and technological processes without exception, such a doctrine is being questioned by the authors. According to the authors, total automation is not advisable especially in conditions of creative work or flexible organization of the production process. The reason for this is the artificial limitation of the creative management decisions by algorithm standards. An opinion is expressed about the need to justify the criteria for a balance between a creative and a standardized (algorithmized) component in making a managerial decision.

1 Introduction

Modern domestic science of automation mainly considers the management of technical systems. Social management issues are currently in some kind of scientific vacuum. At the same time, discussions about the possibility of automation of social management (management of public processes) have been considered since the first half of the twentieth century. Moreover, the first statements were also more technocratic by nature. So in the work "History of the economy. City"[1], published in 1923 by Max Weber (a representative of the German historical school of political economy and the founder of the concept of "rational bureaucracy") writes that machines are self-acting automata. Automata are independent of external conditions, but their functions are manageable. If there is a strong universal need, machines can be used favorably. Such a concept is the most common in modern management practice. At the same time, the totality of modern automation often goes beyond reasonable boundaries and requires scientific understanding. The need for a scientific discussion

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regarding the boundaries of expedient algorithmization accordingly raises the research problem.

Within the borders of historical scientific management schools, the authors consider Max Weber and Henri Fayol to be the founders of the scientific management school. At the same time, according to several sources, Frank Gilbreith and Frederick Taylor were called the founders of the school of scientific organization of labor. In our opinion, this difference creates differences in paradigm interpretation, including modern approaches to management automation capabilities. Although these representatives did not directly consider the problem of the management process automation in their current form, it should be noted that representatives of the scientific management school paid more attention to the role of the individual in the management process. In the authors' opinion the management principles highlighted by A. Fayol (management, control) cannot be fully automated even in modern conditions.

2 Objectives and methods

The study aims to assess the potential boundaries of the management process automation from the standpoint of classical scientific management schools. The methods of analysis are the method of theoretical modeling, analysis and synthesis, as well as the extrapolation method and the induction method.

Speaking about management automation processes a list of stages can be distinguished:

- the first stage: since the end of the 19th century; characterized by the emergence of a school of scientific management, when the theoretical possibilities of automation were hardly discussed;
- the second stage: from the beginning of the '50s of the twentieth century; characterized by the development of the scientific management school and initial attempts to understand the processes of managerial activity automation;
- the third stage: from the beginning of the '90s of the twentieth century; characterized by the organization of information support for the management process and the growing role of information security in making management decisions;
- the fourth stage: since the beginning of the 2010s, characterized by a crisis due to the organization of the information's distribution, the management of information flows, the search for the optimal amount of information for making a management decision.

Nowadays theorizing and studying the possibilities of using artificial intelligence in making managerial decisions are increasingly transforming into such a concept as "information management".

Each of these stages in the management automation process was historically and socially determined by the corresponding era. The stages of management automation represented the phases of the scientific paradigms of the management automation process. We believe that each of the stages ensured the evolutionary development of the modern management paradigm, while we are not sure that the modern stage (information management) is the highest in the framework of the analyzed sequence.

3 Theoretical review

A globally recognized management theorist, Peter Ferdinand Drucker, in his work "Management Practice" [2] (published in 1954), warns that "in the context of the industrial revolution, management faces a serious test of its competence and its most complex problem, entitled "Automation". At the same time, he discusses the prejudices inherent in man and caused by the advent of new technologies.

Peter F. Drucker compares everything written about automation with “gloomy sci-fi literature” with “the looming nightmare of a technocratic paradise in which man makes no decisions.” Explaining what automation is, the author states that this is a system of concepts; the technical side of automation is the result of activity, not its cause. This concept is being developed by modern authors. So, V. Gvozdeva notes that thanks to automation systems introduced into production, managers are allowed to make fully deliberate decisions to perform systematic actions that are based on a specific data set [3]. At the same time, the information support of the managerial process does not guarantee the selection of the correct managerial decision, which, in essence, indicates the probabilistic usefulness of automation.

Peter F. Drucker formulates two concepts of automation. The first concept: automation is stability and predictability. The second concept: automation does not focus on the individual employee and his qualifications. The author does not agree with the principles of mass production of G. Ford, who argued that the product of labor has an organizing factor. It should be noted that, most likely, this means the thought of G. Ford that: “The decisive factor is the product itself, that is, in other words, the decisive factor is the public” [4]. In this statement, the question arises of the need to expand the concept of P. Drucker about the need for “modeling the public”, in other words, about the automation of forecasting consumer behavior. However, such automation, if it makes sense, is beyond the competence of company management.

At the same time, Peter F. Drucker argues that automation is a single and harmonious whole process. Automation allows the optimization of production as its goal in the production of more goods and services with the least cost and effort. The better automation is debugged, the less variability and fluctuations in it, the greater the variety of manufactured products can be. Recognizing the validity of Peter F. Drucker's statement, it is necessary to state that modern practice approaches the issues of variability and fluctuations somewhat differently, striving to algorithmize and automate all business processes (in particular [5]). In our opinion, individual routine business processes can be perfectly algorithmized and, therefore, automated. However, transferring part of the business processes to automated algorithms is inappropriate because the flexibility indicated by P. Drucker from such an algorithmization will only decrease. At the same time, the question of the appropriateness of the automated design of business processes and the question of monitoring their effectiveness remains open.

Peter F. Drucker agrees that the control function is present in automation, but the control criteria are set in advance with the condition of an organized self-functioning simple regulation mechanism, such as simple rejection. Going beyond the scope of material labor, it should be noted that the control process is significantly complicated. Part of the work related to the control of information work, cannot be automated in principle (an assessment of the quality of information can be given based on the results of its consumption, and not in the process of its creation). F. Drucker notes that additional costs for sophisticated equipment are necessary for control, while automation ensures the feedback principle when the product returns to the previous section of work if the work is performed incorrectly.

4 Results and discussions

In our opinion, the loss of an artifact in the process of informational work creates the prerequisites for the fact that labor loses its backbone function. Rather, on the contrary, labor as an information process (algorithm) becomes a system-forming factor in information work, violating its creative nature. It should be noted that the position of G. Ford, who argued that the product of labor has an organizing factor, does not find support among Peter F. Drucker. From the perspective of the school of scientific labor organization, we consider this fact completely logical and often used not only in the organization of labor but also in the organization of business processes. The theses presented in G. Ford's book “Today and

Tomorrow” are the conceptual foundations of the modern concept of “lean manufacturing” (“To save time and to make productive use of the time has the same meaning as the use of mechanical force and the division of labor” [4]). It is obvious that creative (partially informational) labor is less characterized by duration, and, consequently, by time - as a criterion of effectiveness. At the same time, the modern doctrine of lean manufacturing insists that for successful management it is important to have the control mechanism already integrated into the automated production process, thus supporting it. In this sense, control can be fully automated, as it is secondary. At the same time, Peter F. Drucker himself notes that when introducing automation, it is necessary to carefully consider the algorithm of automated work and only then will the work be effective. We propose to extend the last thesis and insist that not only the automation algorithm but also the goals of automation should be carefully thought out.

On the issue of algorithmization, we would question the algorithmization of a significant number of issues related to personnel management (we are talking about methods and techniques of social management). Issues of inclusion, social well-being, etc., are, in our opinion, fundamentally non-algorithmizable tasks, since the parameters used to evaluate these indicators can be called into question.

Undoubtedly, the production process, like most business processes, is cyclical and is characterized by a certain duration (periodicity). This operation correlates with the cyclical nature of reporting, which is accordingly implemented in each reporting period. At the same time, according to the results of each period, the system of indicators is improved, including the change in the planned KPI values. These tasks are completely logical.

Turning to Peter F. Drucker, “Automation is the principle of work organization. Rational interaction of processes and workers.” The author is convinced that the onset of automation will not replace the employee, but without it, management will not be effective. The future belongs to automation and the leader who is the first to realize this and will systematically implement and apply the principles of automation and feedback will secure a leading position in labor productivity. Thus, the logic is hidden in this thesis, which is transformed in modern management - a digitized and algorithmic management process [1].

In the book “Management Tasks in the 21st Century,” Peter Ferdinand Drucker [6] notes that “you cannot manage change, but you can get ahead of it.” Attempts to total algorithmization, just reduce the speed of the change process by forming a rigorous algorithm, following which to a greater extent slow down the change.

We fully agree that today the software allows us to calculate the future performance in a virtual way. A significant number of processes can be simulated. Peter Ferdinand Drucker rightly notes that automation does not affect management decision. At the same time, in a certain way, systematized information creates the conditions for making a certain standard decision, on the one hand, reducing the level of uncertainty, but on the other hand, limiting the intuition of the leader with a total analysis.

In the book “Management. Challenges of the 21st Century” Peter Ferdinand Drucker [7] notes that during periods of important structural transformations, only the leaders of change are afloat, who timely and accurately capture the approaching changes and quickly adapt to them, taking advantage of the opportunities that open to themselves. Undoubtedly, modern automation is a field for creating a wide range of managerial capabilities, while reducing the role of the leader’s personality in the decision-making process.

Niels-Goran Olve, Jean Roy, Mongoose Vetter [8] note in the book "Evaluation of the effectiveness of the company" that the highest coefficient of application of the indicators’ process efficiency falls on the dynamic indicators. These indicators characterize the business and its results for a measurable period. There are more indicators of intellectual capital in addition to the above, which are applied, such as work technologies, databases, and software for everyday operations automating.

The authors draw attention to the fact that, when automating the calculation of indicators, employees think less. The use of information technology allows not to store information on one computer, it can be downloaded as needed. The authors argue that automated control will be able to ensure success where companies previously won in the competition using traditional technologies [5].

At the same time, for highly competitive markets, the question that workers think less is not, in our opinion, a definite plus. One more paradox of modern management should be noted. On the one hand, companies insist on the need to develop the independence and responsibility of employees, measure and evaluate the involvement of employees in management. At the same time, some authors, as noted above, are proud that workers reflect less. Undoubtedly, when performing routine operations, such optimization is justified, however, when performing creative operations, the employee's attention switches from a creative attitude to his work to a creative attitude to the process or the conditions in which this business occurs. The last thesis is related to the fact that most of the Kaizen improvements are focused on working conditions or design (forms of documents), and not on improving the algorithm itself. The latter is completely logical since the quality of the algorithm characterizes its universality and immutability. In modern conditions, employees who will try to make corrections to the algorithm itself demonstrate its inefficiency (vulnerability), thereby casting doubt on the managerial decision made by the ineffective algorithm.

In the practice of business entities, this situation develops as follows. At the stage of drafting technical specifications for further algorithmization, the mapping of actual business processes taking place in the organization takes place. Quantitative results of a certain phase of the business process are determined (material or the quantitatively established result of the labor of each functional stage). Further, these algorithms are optimized and in the future, represent the basis of the company's software workflow algorithm. Any deviation from the software algorithm is possible in most companies, however, it is implemented through a specific procedure, as a rule, through Kaizen-offers. The average period of passing Kaizen proposals (analysis and implementation) in the companies we studied is about a month. Until this time, deviations from the developed algorithm are almost impossible.

5 Conclusion

Summing up the theoretical understanding, we can say that the modern stage, called by us the stage of "information management" is not yet fully established scientific paradigm. Practical experiments related to the study of the possibilities of using artificial intelligence in making managerial decisions do not yet have a univocal scientific and practical assessment. A modern attempt at total automation and algorithmization of all business processes of a company is a factor of not self-organizing the production process, but a factor of limiting its flexibility. In the context of standard processes (hardware processes, mass production), we consider such a total algorithmization as a definite advantage. At the same time, in conditions of flexible production processes (unit production, creative labor), the use of totally regulatory information systems does not seem justified. Especially in the context of the digital economy paradigm development, which at the same time provides maximum flexibility in the production and consumption of the product and creates opportunities for the use of artificial intelligence in the management process? Such unjustifiability is laid not only in the very nature of flexible production processes but also comes in a certain contradiction with the opinions of management classics. At the same time, we fully agree that information systems in the modern management process create the prerequisites for reducing the level of uncertainty, improving information support for making managerial decisions, reducing the time for information collecting, processing, and organizing.

Thus, we believe that for each production system it is fundamentally important to find a balance between the continuation of the fashion trend of total automation and, on the other hand, a creative (intuitive) approach to making managerial decisions. However, an analysis of modern literature has led to the understanding that most authors consider automation exclusively in a positive context. This is evidenced by the lack of scientifically based criteria characterizing the indicators of the balance between information and human in the process of making managerial decisions. Appealing to the management classics, in this case, is practically useless since during their creative activity, there was no discussion of total automation and computerization.

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