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PROCESS-BASED APPROACH IN QUALITY MANAGEMENT

Introduction

The use of process approach in organization management is a crucial element of ISO 9001 system requirements. The practice of this approach has been verified in numerous companies. It is effective, provided that the principles and methods of quality management are properly applied. It can be used not only in organizations that have decided to implement a quality management system e.g. based on the EN ISO 9001:2015 standard, but also it may be successful in business entities that have not decided to implement a standardized quality management system. Over the years, numerous articles have been published on the fundamentals of process-based management. They provide theoretical foundations helpful in understanding and developing company's internal processes.

1. Understanding what a process is

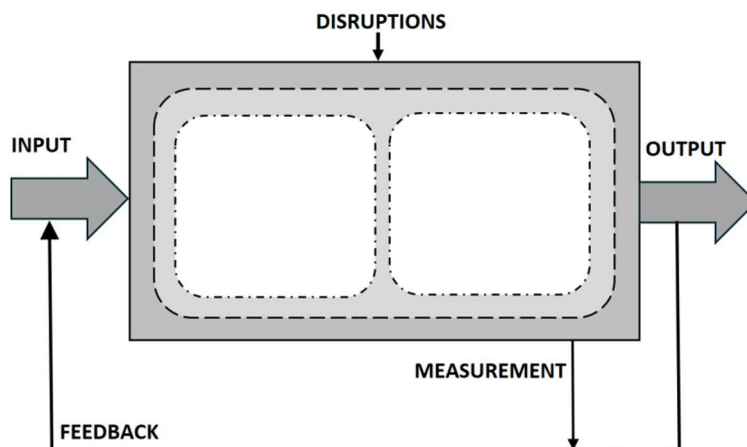
Proper, intuitive understanding of the concept of process is important for the practice of implementing a process-based approach. Modern literature on the subject provides many definitions. However, it is not helpful to recall all of them to understand this concept; this could be useful in the historical analysis of the changes occurring in this area. The point is not to make it more difficult for the reader to understand the whole idea but rather to make it easier. Based on his own experience and observations during auditing and consulting activities, the author of the article believes that errors made in companies regarding the practical approach to the process-based approach most often result from an imprecise understanding of the issue. Very frequently, there is a confusion between two separate concepts: the process and the procedure.

From the point of view of the ISO 9001 system, it is important to remind the normative definition, according to which a process is *a set of interrelated or interacting activities that use inputs to deliver an intended result*¹. The standard explains that processes should be defined, measured, and improved. They interact, cross functional boundaries and must be coherent with

¹ PN-EN ISO 9000:2015-10, Systemy zarządzania jakością. Podstawy i terminologia, p. 19.

organization's objectives. *Processes include interrelated activities that transform inputs into outputs*². The definition implies something that could be simplified and comes down to the statement that a process is basically any activity that transforms inputs into outputs. A flowchart of a single process is presented in Figure 1. The input may include the output results of previous processes because, in fact, a single process that is independent of other elements hardly ever exists. A single process almost always interacts with other processes; hence the official definition is about a set of interconnected activities. The inputs may include products, semi-finished products, raw materials, information, data, documents, knowledge, and everything else that can be considered factors necessary for the functioning of the process. The same applies to the output which provides the process result, i.e. tangible or intangible products.

Figure 1. Single process



Source: Author's research.

Perfect conditions for the functioning of processes do not exist. Each process is affected by various factors that may disturb its functioning. Figure 1 presents them as disruptions. There may be numerous sources of interference. These may include delayed deliveries, employee absenteeism, errors in the information provided, changes in legal regulations and the standardization system, changes in market conditions and many others. Regardless of external disruptions, they may also occur within the process itself. These include mistakes made by employees implementing a given process, errors resulting from the functioning of the infrastructure or control and measurement equipment, as well as errors resulting from decisions made by people managing the organization. Disruptions may occur in the technology used and

² Ibidem, p. 13.

they may be caused by several other unfavorable factors. The complexity of a single process can be really significant. Within the process, a number of different activities usually take place that create the output. This will be especially visible in the company's main processes. The production processes of large companies are often associated with their significant complexity and a number of smaller processes within the main process. As noted in one of the sources, the decomposition of the main process is not only impossible but can be carried out indefinitely³. Of course, this is not the case in practice and reasonable boundaries are assumed for the decomposition of such a system.

To illustrate the functioning of processes, human body can be used. It is a perfect example of process management in which the main process can be distinguished that is related to maintaining our vital functions and consists of a set of numerous subprocesses. There are auxiliary processes functioning in it that do not directly affect our existence but are important for ensuring proper comfort of life. The organism is supervised by management processes that control its functions. For example, the breathing process is controlled automatically. We do not think about the frequency and depth of our breaths, although we can consciously speed up and deepen them. However, this is not a comfortable state. The organism itself adjusts respiratory parameters to the body's current needs. When the effort increases, for example as a result of running, the frequency and depth of breathing also increase as the organism increases the demand for oxygen. Process interdependence is also visible. The heart speeds up its work and pumps more blood so that oxygen is distributed more effectively in the body. If the effort becomes excessive and there is a risk of overheating the body, cooling processes are initiated: we start to sweat. A system of "sensors" collects measurements from inside and outside the body and processes the data on an ongoing basis. Although we can hold our breath, the increasing concentration of carbon dioxide will finally force our organism to start breathing again. Unfortunately, there are also disturbances to which the body reacts, trying to bring physiological functions to a state of balance. As we can see on our own, the feedback system works perfectly. Thus, our organism can be perceived as a large process-managed company.

It would be worth mentioning, what a process is not. It should not be confused with a procedure. According to the definition, a procedure is a specified way to carry out an activity or a process⁴. The definition suggests the reasons of the confusion. After all, the description of

³ A. Bieganski, G. Bartnik, *Kryteria podziału procesów w organizacjach*, „Problemy Jakości” 2002, No. 6, p.18-21.

⁴ PN-EN ISO 9000:2015-10, p. 20.

processes includes the way they function as well as the input and output data. Moreover, persons responsible for the functioning of the process are appointed. So perhaps the description of a process is also a description of a procedure? It is conceivable that in some cases this may happen, but the description of the functioning of a process is not sufficient enough to meet this criterion. This is due to the fact that within the process more documents are frequently involved: procedures, instructions, specifications. If, for example, we consider the production of a food product, the description of the process will include details of the sequence of events: weighing, dosing ingredients, mixing, forming, baking, cooling, packaging, controlling the weight of packaging, removing from the line, packing into collective packaging, internal transport. Even a detailed description of the course of action, sequences of events and their interactions will not provide complete information. A proper functioning of the process will require recipes, machine manuals, inspection and maintenance plans and a number of others. And how to manage this collection of data, who should perform a given activity and when and what control activities should be conducted, and who should do it. This purpose will be served by the manufacturing process procedure applicable in the implementation of the production process.

Regardless of whether the owners of the organization and the management staff have process awareness or not, the organization still operates in a process system. It does not depend on anybody's will or the lack of it. Everything in the world around us operates in a process system. Therefore, it is not worth opposing this natural phenomenon as it will lead to random actions and greater susceptibility to interference. The system will become less resistant to negative factors, both internal and external ones. The awareness of what processes are, is important to manage them and prevent nonconformities, and if they do occur, to take effective correcting actions.

2. Process monitoring

According to Peter Drucker, one of the representatives of modern management concepts, what gets measured gets managed. Setting clear goals for an organization is essential and is related to the ability to manage it. What is not measured may be easily neglected in the management process⁵. Also W.E. Deming pointed out the importance of measurement. Monitoring, checking the results of what has been done, is included in the PDCA (*Plan, Do,*

⁵ M. Klimczuk-Kochańska, *Wkład Petera F. Druckera w rozwój teorii zarządzania* [in] K. Klincewicz (ed.), *Zarządzanie, organizacje i organizowanie – przegląd perspektyw technicznych*, Wyd. Naukowe Wyd. Zarz. UW, Warszawa 2016, p. 72.

Check, Act) cycle. The cycle, in turn, is the basis for the structure of quality management standards.

One of the fundamental questions is what is: what to measure? The answer has two sides. On the one hand, the statement can be very simple: one should measure what is important for the proper functioning of the process. On the other hand, identifying the areas that are really important may be involved with a certain degree of complexity. This is not always easy to determine. Sometimes it will be necessary to establish a hierarchy of importance. For example, it may seem necessary to monitor the deadlines of individual work stages in the case of designing processes, This frequently happens in companies. It seems that keeping to deadlines, with the consideration of the planned costs, may be the measure of success. However, the completed project may not be successful and the entire activity may end in a failure. Why? The project may not be adapted to the real demand of the market or may lack innovative features. This simple example may illustrate that it may be necessary to coordinate the action plan with marketing processes, market research, observation of market trends and competitors' activities. Lack of a broader view on the issues of process management usually leads to problems. This was the case with the history of the development and failure of the Polonez car. When it was developed in the early 1970s, its technical solutions although not very innovative, were similar to those used in other car brands available on the market at this time. When the production was terminated in 1991, the difference was so great that further manufacturing was not economically justified. The situation was similar with radio and TV equipment and household appliances. Lack of adaptation to the changing market need may affect all processes in the organization and lead directly to its failure.

It is essential to planning the monitoring. A good plan includes proper identification that is conducted before determining the monitoring indexes and parameters. It is important for people who manage organizations not only to realize the importance of the process approach but also to actively engage in related activities.

3. What to start with?

The answer to this question can be brief: with a good identification and description of all company processes. This stage is not always treated by people managing organizations as something really important. The reason for this can be found in the belief that everyone knows their organizations. However, the point is to deepen this knowledge and perhaps get to know the company anew. The aim is also to identify areas where monitoring should be used and to

determine the manner and methods of conducting measurements, as well as the boundary parameters. Problems are often caused by places where two or more processes meet. Determining responsibility boundaries leads to the elimination of places where the scope of competence is blurred. In places where processes meet, information flow is often disrupted. Probably everyone has experienced delays in order processing that were not due to the lack of availability of goods but to the fact that someone did not take care of something or did not pass on important information.

Understanding all processes, their interconnections, all input and output components, factors that may have a negative impact on the implementation of tasks and what is the essence of a given process will lead to considering how to prevent negative phenomena and how to act if they occur. Flowchart may be a useful and simple tool which can be used to describe any process to show sequences of events, iterations, and decision branches. They may be applied in various situations and are considered an excellent technique to help demonstrate processes in order to improve quality⁶. The use of graphic notations is recommended due to their intuitiveness and clarity of presentation⁷.

The next step may be setting the monitoring parameters with particular consideration to the ones that are considered critical to the given process. Obviously, these parameters have to be monitored and analyzed. A complementary activity will, of course, be risk analysis, but it should be remembered that the identification and estimation of threats leads to general conclusions concerning what should be done to counteract the possibility of unfavorable events. However, it is in the monitoring process that the identification that was previously carried out is practically applied. When determining and describing the monitoring methods, it should be clearly indicated how nonconformities will be identified. What is more, when trends are monitored, e.g. by applying statistical methods using Shewhart control charts, it will be possible to detect quality problems before they occur. The point is not in capturing events from samples that already indicate that expected values have been exceeded. A better solution is to set control boundaries within which decision is made whether preventive action should be taken. A process shifted towards nominal values may generate increased costs⁸. A selection of adequate methods and tools will make it possible to apply recognized principles of process quality management.

⁶ E.W. Duggan, H. Reichgelt, *Measuring information systems delivery quality*, Idea Group Publishing, Hershey USA 2006, p. 117.

⁷ J. Wieczorkowski, *Analiza wykorzystania podejścia procesowego w zarządzaniu jednostkami administracji publicznej*, „Studia Ekonomiczne. Zeszyty Naukowe UE w Katowicach” 2015, No.243, pp. 329-330.

⁸ T. Greber, *Statystyczne sterowanie procesami – praktyczne przykłady zastosowania*, StatSoft Polska 2005, p. 19.

4. Process improvement

Process improvement is crucial to achieving the stability of organizational functioning. The data obtained through process monitoring have to be properly processed so that the results influence the decisions made. The knowledge about the results obtained in individual processes provides a summary view of the functioning of the entire organization. The analysis of the data makes it possible to notice whether there is a correlation between certain parameters, which in turn will allow for a better prevention of nonconformities. Moreover, when conducting internal audits within the quality management system, it is worth paying due attention to how the processes function and what can be improved.

Conclusions

Process-based approach to quality management should be a high priority in organization management. It is significant for proper functioning of the entire organization, which consists of a number of interrelated units. They are interdependent, and their interactions may contribute to strengthening or weakening the operations conducted and consequently affect the quality of products and services. Correct identification of processes and the establishment of the monitoring rules and the ranges of intended values enables drawing conclusions in order to improve them. Continuous improvements, even small ones but introduced systematically, allow the organization to adapt to the changing conditions in its operating environment.

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Abstract

Process-based approach to management is an important aspect of the proper functioning of organizations. The understanding what a process is makes it possible to determine monitoring criteria. The analysis of the data obtained through the monitoring of processes leads to decisions that may have a significant impact on improving the quality of products and services. This approach aims to eliminate nonconformities and prevent their occurrence, which contributes to organizational success.

Key words

Management, process, quality, monitoring.