

THE ESSENCE OF PROCESS MANAGEMENT THROUGH THE METHODS AND TECHNIQUES USED IN IT

Magdalena WINIARSKA^{1*}, Joanna KIZIELEWICZ²

¹ Faculty of Management and Quality Science, Gdynia Maritime University; m.winiarska@au.umg.edu.pl,
ORCID: 0000-0003-4489-9437

² Faculty of Management and Quality Science, Gdynia Maritime University; j.kizielewicz@wznj.umg.edu.pl,
ORCID: 0000-0001-7415-9928

* Correspondence author

Purpose: The article aims to identify and systematize the current scientific achievements in the area of methods and techniques used in process management.

Design/methodology/approach: The article is a review, in which the method of exploratory research of existing materials is used, including a systematic review of the literature and the desk research method. The obtained results were subjected to qualitative comparative and critical analysis.

Findings: The results of the analysis showed that some methods and techniques can be difficult to implement or resource-intensive. Therefore, organizations need to be aware of these challenges and plan accordingly, paying attention to employee training, change management, and ensuring adequate resources are provided.

Research limitations/implications: The concepts, methods, and techniques of process management mentioned in this publication are not exhaustive. Many other actions should be carefully examined.

Originality/value: The study attempts to organize the methods and techniques used in process management so far. It can be an interesting reference material for other researchers and managers responsible for the area of process management in organizations.

Keywords: Process Management, Organization Management, Process Mapping.

Category of the paper: Literature review.

1. Introduction

In traditional structures found in an organization, the overall processes are divided into fragments, and each of them can be carried out by different organizational units. The classic improvement of the organization, which consists of the improvement of the activities of employees within a specific organizational unit, does not include the perspective of the entire

process in which this unit participates. As a result, employees can perfectly perform their work within their duties, in their organizational unit, and yet the overall process (in which this unit participates) may be inefficient, e.g. due to too long (time-consuming) flow of documentation between different departments of the organization. The main reason for this state of affairs is considered to be the problems of coordinating the flow of processes between different organizational units. This means that by analyzing the overall processes in the organization and then making appropriate changes in the processes and organizational structure, it is possible to ensure more effective and effective cooperation between the organization's employees and the proper fluidity of processes between different departments (e.g. by eliminating downtime or duplication of activities).

Changing an organization's more ubiquitous functional management habits to process management requires knowledge and skills in several areas. Many subdisciplines of management are involved in process management, which according to Burlton (2001) is its strength, not its weakness. Effective and efficient process management is an essential element of success in any organization (Fischbacher-Smith, 2017). In today's fast-paced world, organizations need to be able to quickly and effectively adapt their processes to changing conditions. In this context, various process management methods and techniques such as 5S (Patra et al., 2005), Just in Time (Zatar, 2022), Ishikawa chart (Bose, 2012), Pareto analysis (Alecu, 2010), Balanced Scorecard (Alsyouf, 2006) and many others are essential for effective process management (Ubaid, Dweiri, 2020).

The authors attempted to conduct a comparative analysis of management methods and techniques, verifying their strengths and weaknesses. In addition, it discusses how these methods and techniques are applied in the context of selected management concepts, such as Benchmarking (Holloway et al., 1997), Reengineering (Kubicová, 2015), Lean (Reynders, Kumar, Found, 2022), Six Sigma (Patel, Chudgar, 2020), Total Quality Management (Jasti et al., 2022) and others.

Methods and techniques of process management in the scientific literature are often discussed in the context of their practical application. However, it is worth noting that achieving the desired results through the use of different process management methods and techniques depends on the specifics of the organization and the context in which they are used. Therefore, an organization needs to have a general understanding of what goals and processes make it up before implementing specific actions.

2. Research methodology

The exploratory method and the so-called desk research were used in the study. Methods. The identification of research gaps was preceded by a systematic review of the literature on the issue of process management in research organizations. There are still few studies in the literature devoted to a comprehensive approach to methods and techniques used in process management. In addition, few sources indicate how individual management concepts use developed and proven process management mechanisms. Therefore, the aim of the paper is m.in to systematize the current scientific achievements in the context of methods and techniques used in process management, but also for the needs of other management concepts.

From several available databases, a targeted selection was made and the resources collected in the Scopus and Web of Science databases were subjected to a deeper analysis (Figure 1). To systematize the search, a list of criteria was created according to which data mining was carried out.

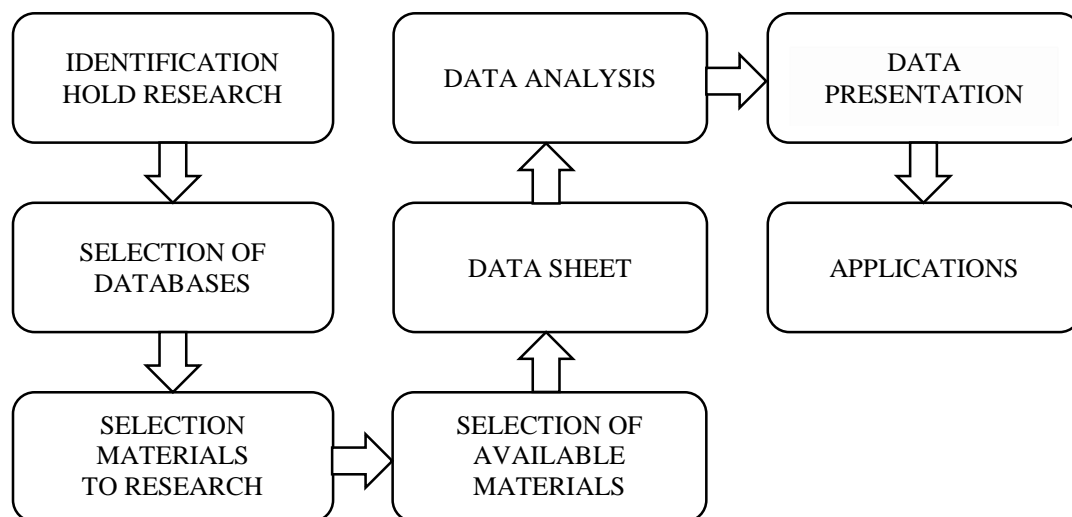


Figure1. Systematic literature review.

Source: own elaboration.

The type of publication was used as the first criterion and the search was limited to scientific articles and review articles only. Then, the phrases (phrases) that best reflected the context and subject of consideration were determined, i.e. "process management methods" and "process management techniques". As a result of narrowing down the search area, 78 entries for the phrase "process management methods" and 76 entries for the phrase "process management techniques" were obtained in the Scopus database (Table 1). On the other hand, in the case of the Web of Science database, the number of these items was much higher and amounted to 656 items for the first return, and 42,108 items for the second return, respectively.

Table 1.
Summary of the results of the review of selected databases

Database Criteria	Scopus		Web of science	
	Process Management Methods	Process Management Techniques	Process Management Methods	Process Management Techniques
no restrictions	78	76	656	42,108
English only	64	71	623	40,132
type of materials	61	68	619	39,939
Open access	17	14	202	12,890
only articles	11	7	81	170

Source: own elaboration.

In the next stage of the selection of the collected publication database, further exclusion criteria were applied, publications in English were qualified for further analysis, and all publications in other languages were rejected. As a result of this procedure, publications in the Scopus database were limited to 64 items for the term "process management methods" and 71 items for the term "process management techniques". Accordingly, in the Web of Science database, 623 entries were obtained for the first term and 40,132 for the second term. Another exclusion criteria was the type of source materials, which means that only book chapters, articles, and conference proceedings were allowed to be analyzed. All other available forms of source material have been excluded. This criterion did not result in a significant decrease in the number of items to be tested.

For the term "process management methods" in the Scopus database, 17 and 11 items were obtained, respectively, for the following exclusion criteria, i.e. open access and article only. On the other hand, in the same database, 14 and 7 items were obtained for the term 'process management techniques' and using the same exclusion criteria respectively.

The same process of applying the exclusion criteria was applied to both terms in the Web of Science database, resulting in a final score of 81 entries for the term "process management methods" and 170 entries for the term "process management techniques". At this stage, the database of publications has been further filtered using the inclusion of phrases in the text and abstracts, and not only in the titles of scientific publications. As a result of this operation, the final analysis was based on 94 publications.

3. Process management in selected management concepts

The essence of management is to effectively direct an organization's resources to achieve specific goals. Process management is a structured and systematic approach to the analysis and continuous improvement of processes (Biazzo, Bernardi, 2003). Hellström and Eriksson (2013) see process management as a set of many methods, techniques, and tools that, when properly applied, enable the staff of an organization to improve its functioning and improve internal

processes. In addition, the essence of process management is both purely technical aspects and the human factor (Snell, Dean, 1992). When talking about process management, we should refer directly to the aspects related to processes, which include identifying, planning, organizing, conducting, and controlling the flow of work, performing tasks, and optimizing results. In other words, it's administration and continuous improvement of processes in the organization.

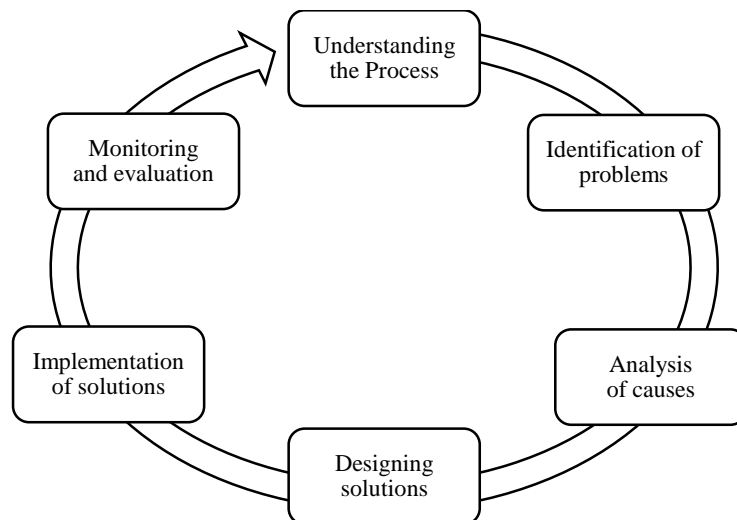


Figure 2. Essential elements of process management in an organization.

Source: own elaboration.

An organization whose decision-makers want to use process management must be aware that this is a time-consuming process and requires the support of both senior management and all employees (Aguilar-Saven, 2003). At the same time, the indicated way of carrying out tasks must be understandable to all participants, as it is difficult to identify areas for improvement or understand how the changes introduced will affect overall performance without knowing them (Brocke et al., 2015). In process management, all the elements indicated in Figure 1 are closely interrelated. If you do not know and understand the processes implemented in the organization, you cannot expect that the identification of problems will be effective, focusing the attention of decision-makers on their solution (Åslund, Bäckström, 2017). In addition, the lack of understanding of processes makes it impossible to determine where inconsistencies occur and does not allow us to understand their causes (Dei, van der Walt, 2020). On the other hand, understanding the causes of problems allows the organization to direct its actions toward their elimination, not just dealing with their effects (Arantes et al., 2023; Benner, Tushman, 2003; Danilova, 2019; Kohlbacher, Gruenwald, 2011; Lee, Dale, 1998; Navarro, 2021; Ponsignon, Smart, Maull, 2012; Saravia-Vergara et al., 2023; Segatto et al., 2013; Sonteya, Seymour, 2012).

Another key element in process management is the ability to develop valuable solutions to eliminate the causes of non-compliance (Silva et al., 2012). The proposed actions may include changing the process, modifying its components, using other methods and techniques, or systematically improving existing processes that also require their implementation

(Draulans, deMan, Volberda, 2003). At this point, once again, all stakeholders must understand the processes, as it requires them to be fully involved in, m.in, for example, change management, training delivery, and monitoring the impact of changes on their performance (Rolinek et al., 2014). Any change or modification made to existing processes cannot go unchecked and cared for by the staff, as the management of the organization must be aware of whether the expected benefits have been achieved (Macdonald et al., 2016; Susa Vugec et al., 2018). When talking about process management, it should be borne in mind that they cover various areas of knowledge, from economics, engineering and marketing, to psychology and human behavior (Bachmann, Jodlbauer, 2023).

There are many different management concepts, and the choice of the one best suited to the specifics of the organization depends on the management of the organization (Bloom et al., 2012). In the era of constant change, management concepts implement some of the elements of process management to streamline them and improve both the efficiency and effectiveness of their results (Abd Rahman et al., 2013). In this context, the organization should be seen as a system of processes that should be mapped, improved, and kept under control (Aparecida da Silva et al., 2012; Armistead, Pritchard, Machin, 1999). In the literature on the subject, it is possible to distinguish various management concepts, which in their assumptions refer to selected elements of process management. Interesting conclusions can be drawn when comparing the concepts of management and the elements of process management used in them (Table 2).

Table 2.

Selected management concepts using elements of process management

Concept	Elements of Process Management
Total quality management (TQM)	<ul style="list-style-type: none"> • using processes to improve the quality of products and services, • process improvement is one of the main objectives of the concept, • flattened hierarchical structure, • focus on process thinking constant monitoring of the course of processes, • teamwork in process improvement.
Lean management	<ul style="list-style-type: none"> • minimizing waste in processes, • emphasis on improving the flow in processes by eliminating unnecessary activities, • flattening of hierarchical structures processes are key elements of the organization, • constant monitoring of the course of processes, • teamwork in process improvement.
Business Process Reengineering (BPR)	<ul style="list-style-type: none"> • radical change of processes to improve quality, • analysis of processes for the client's needs and elimination of low-value work, • flattening of hierarchical structures, • processes are key elements of the organization, • constant monitoring of the course of processes, • group work in the reorganization or reconstruction of processes, • simplification and standardization of overly complicated work, as well as automation of repetitive work, • enabling processes with modern systems and data.

Cont. table 2.

Six sigma	<ul style="list-style-type: none"> • minimizing errors is one of the key goals, • processes are key elements of the organization, • improvement of processes focused on customer and organizational satisfaction, • strong emphasis on constant monitoring and measurement of various aspects of the process, • continuous quality improvement based on statistical analysis of processes, • teamwork in process improvement.
Benchmarking	<ul style="list-style-type: none"> • thorough needs assessment comparing your processes to the best processes in the organization's industry, • analysis and use of the experience of others, • strives to improve the efficiency of processes, • focuses more on processes than on statically understood properties, features, values, effective planning, • management and measurement of changes, • teamwork in process improvement.
Outsourcing	<ul style="list-style-type: none"> • sourcing goods and services needed by the organization from outside, • concentrating processes on the essential goals and key competencies of the organization, • improves the elasticity of the structure, • continuous monitoring, • focus on optimizing and improving process efficiency.

Source: own elaboration on the base on: Agus, 2004; Armistead, Pritchard, Machin, 1999; Andersson, et al., 2006; Antony et al., 2021; Ballard, Howell, 2003; Bandyopadhyay, Lichtman, 2007; Bañuelas, Antony, Brace, 2005; Brilman, 2002; Ciptono, 2007; Erdil, Erbiyik, 2019; Hellström, Eriksson, 2013; Holloway et al., 1997; Jarvenpaa, Stoddard, 1998; Kadarova, Demecko, 2016; Lee, 2020; Macintosh, Maclean, 1999; Parkes, 2015; Prajogo, Sohal, 2003; Sweeney, 1994; Tayauova, 2012; Zitkiene, Dude, 2018.

The most frequently mentioned management concepts include Total Quality Management Lean Management (Parkes, 2015), Business Process Reengineering (Ciptono, 2007), Six Sigma (Bañuelas, Antony, Brace, 2005), Benchmarking (Sweeney, 1994), and Outsourcing (Lee, 2020). Total Quality Management focuses on quality, where the organization is seen as a network of systems and connections existing between them (Prajogo, Sohal, 2003). Using this concept, management focuses on the evolutionary approach to managing an organization, i.e. managing individual processes in all its aspects (Agus, 2004). Another of these management concepts emphasizes the improvement of flow in processes (Andersson et al. 2006). Lean management is a concept of an approach to restructuring an organization (Kadarova, Demecko, 2016). Management should strive to re-examine the tasks performed as part of processes or entire processes and possibly eliminate unnecessary activities (Ballard, Howell, 2003). Rationalization and elimination of waste introduced by the management of the organization should comprehensively cover all areas of its functioning (Douglas, Antony, Douglas, 2015).

The concept of change-oriented in an organization was presented by Hammer (1996), who recognized a focus on processes as an essential ingredient of successful reengineering (Macintosh, Maclean, 1999). The distinguishing feature of reengineering is rapid and radical changes, which must be implemented with the constant participation and support of the entire management of the organization (Jarvenpaa, Stoddard, 1998).

On the other hand, in Six Sigma, i.e. a quality-oriented concept, the involvement of all employees and teamwork are the key to achieving the intended goals (Laureani, Antony, 2019). The basic task carried out by all people who make up organizations is to reduce the variability of both individual processes and their entire groups (Antony, 2021). Therefore, organizational culture and management commitment have a significant impact on the implementation of Six Sigma effectively and efficiently (Bandyopadhyay, Lichtman, 2007).

Another management concept focused on change is benchmarking, the implementation of which assumes comparing one's organization to those that are the best in a given area (Erdil, Erbiyik, 2019). Another key element of this concept is the pursuit of the best possible quality of manufactured products or services (Holloway et al., 1997). It is based on the search for patterns, i.e. ways of proceeding based on the analysis and use of competitors' experience, leading to the success of the entire organization.

Outsourcing, on the other hand, involves purchasing goods and services needed by the organization from external suppliers based on previously concluded contracts and agreements (Tayauova, 2012). In an outsourcing relationship, the contract between the client and the supplier can be of a variety of nature (Damanpour, Magelssen, Walker, 2020). Outsourcing, compared to the usual relationship between the supplier and the customer, is associated with a much greater flow of information and building trust between the parties to the contract (Zitkiene, Dude, 2018). Many of the goals that organizations set for themselves require interdepartmental communication, cooperation, and commitment. Individual workplaces are becoming a thing of the past, or at least they should (Lee et al., 2019). Process management as a concept has its roots in the quality movement and shifting the focus from product characteristics to process characteristics (Hellström, Eriksson, 2013). It should be stated that process management is a broader, more mature concept that is suitable not only for times of revolutionary change but also for times of evolutionary development of organizations (Chromjakova, Trentesaux, Kwarteng, 2021), which is of great importance for both current and future organizations.

4. Methods and techniques used in process management

The purpose of using available methods and techniques in the organization by the management is to improve and improve the effectiveness, efficiency, quality, but also the efficiency of the processes implemented in the organization (Hidalgo, Albors, 2008). In the context of process management, a method is a way of proceeding that allows you to achieve your process-related goals. Technique, on the other hand, is a tool used as part of processes to implement the assumptions of a specific method (Linderman, Schroeder, Sanders, 2010). In the literature as well as in practice, there is a wide range of methods and techniques used for the implementation of process management (Table 3).

Table 3.*Selected techniques and methods used in process management*

Method/Technique	Selected features
5S	<ul style="list-style-type: none"> • increasing the efficiency of processes m.in. removing waste from processes, • organize a work environment that is safe and productive for your team.
Pareto Diagram	<ul style="list-style-type: none"> • graphical distribution of relative and absolute types of errors or problems along with their causes, • hierarchy of factors influencing the studied phenomenon with emphasis on the elements most influencing the problem.
Value Stream Map	<ul style="list-style-type: none"> • a graphical representation of the flow of materials and information that is needed to deliver a product or service to the customer, • identify waste within and between processes, • gain insight into decision-making and process flows.
Single Minute Exchange of Die (SMED)	<ul style="list-style-type: none"> • streamlining current processes by finding solutions to problems within processes, • it helps to find out why processes are not working well, • it helps to find long-term solutions to the problem.
Ishikawa Diagram	<ul style="list-style-type: none"> • a way to visually indicate the causes of a given problem or effect, • identifying and analyzing all possible causes of the problem, • introduces brainstorming sessions to solve problems.
SIPOC Analysis	<ul style="list-style-type: none"> • helps to organize data about human and material resources involved in processes, • identification of all relevant elements needed to improve the process, • defining complex processes that are not properly planned.
Process Map/ Process Flow Chart	<ul style="list-style-type: none"> • graphical visualization of processes showing each of its elements, • supports an understanding of how processes work, • supports the identification of areas within processes that require changes, • processes that require change, • useful in the process of process improvement and in identifying areas for improvement.
Activity Based Costing (ABC)	<ul style="list-style-type: none"> • assessment of the costs of implementing activities, resources, facilities and costs, • assign resources to costs based on their consumption
Just in Time (JIT)	<ul style="list-style-type: none"> • consists in the organization of production, • harmonizing the work of all its elements in order to ensure a continuous flow, reduce unnecessary inventory, reduce overall production costs and improve efficiency, • it enables you to manage your organization's inventory effectively.
Kanban	<ul style="list-style-type: none"> • supports production control, • promotes the principle of no shortages, delays, inventories, queues, idleness, unnecessary operations and controls, and relocation, • liquidation of pre-production, interoperable and product warehouses
Balanced Scorecard (BSC)	<ul style="list-style-type: none"> • a picture of the organization based on four perspectives important from the point of view of organizational effectiveness: financial, customer, internal processes, and development (learning and improvement), • prioritization of activities/initiatives, • integration and monitoring of key processes.
Critical Path Method (CPM)	<ul style="list-style-type: none"> • allows you to estimate the duration of a given process based on the analysis of a sequence of events, • determination of the earliest and latest possible completion times of activities.

Source: own elaboration on the base on Agostino, Arnaboldi, 2012; Gavrilova, Andreeva, 2012; Hajdu, Isaac, 2016; Heinrich et al., 2009; Jonsson, Mattsson, 2006; Marria, Williams, Naim, 2016; McCormack, Rauseo 2005; Pavlović et al., 2014; Pun et al., 2007; Raman, Basavaraj, 2019; Schoensleben, 2010.

Some management techniques are largely based on statistics, others on the scientific method or the specific way of thinking of their creator. Some are easy to implement, but there are also those whose use must be preceded by a series of training and practical workshops. Regardless of the mechanism of their action, the results and results of using each of them require time, regularity, and careful action of the people using them (Bier, Lange, Glock, 2020).

For example, 5S is a set of techniques aimed at establishing and maintaining high-quality workplaces (Marria, Williams, Naim, 2016) and is mainly used in the Lean concept. Kanban is used to optimize work and processes to achieve the highest possible efficiency, and reduce waste to a minimum by visualizing work and continuously improving processes (Jonsson, Mattsson, 2006). Another way to graphically represent the flow of a process or an entire set of processes is a process map (Heinrich et al., 2009). Writing out a sequence of actions, it enables the person to identify downtime and optimize individual work items (McCormack, Rauseo 2005). On the other hand, Pareto analysis using statistics gives management a tool to isolate the factors influencing the outcome of a given action (Raman, Basavaraj, 2019). The other tool that is used to identify the cause and effect of a given quality management situation is the Ishikawa diagram (Pavlović et al., 2014). Just-in-time method supports decision-makers in managing inventory so that it is delivered on schedule and on time (Pun et al., 2007).

Balanced ScoreCard is used to planning daily activities and deliveries, and also assigning priorities to products, activities and results (Agostino, Arnaboldi, 2012). On the other hand, Critical Path Method, gives you the opportunity to indicate the implementation time, minimum and maximum, of key activities affecting the completion of the process (Hajdu, Isaac, 2016). To establish the relationship between the costs incurred, the necessary outlays and the results obtained, the management in the organization should use the Activity Based Costing method (Schoensleben, 2010). A management technique is a recognized method for analyzing or solving a recognized type of management problem in a detailed, systematic manner (Gavrilova, Andreeva, 2012). Both management methods and techniques, skillfully used by the employees of the organization, in most cases, can improve its functioning. At the same time, they can and are used both to counteract and to prevent problems.

5. Process Management Methods and Techniques – Strengths and Weaknesses

Process management is a key aspect of any organization's operations. In the technical dimension, it consists of graphically representing specific resources and data and placing them in a specific process (Isaksson, 2006), comparing the value of a given quantity with a unit of measurement of that size, rebuilding and constantly striving to obtain ideal processes (DeToro, McCabe, 1997). Proper process management can lead to increased efficiency, improved quality,

and reduced costs (Armistead, Pritchard, Machin, 1999). There are many different process management methods and techniques that organizations can employ to achieve these goals. Each of these methods and techniques has its strengths and weaknesses, and their effectiveness depends on the context in which they are used.

Table 4.

Strengths and weaknesses of selected management methods and techniques

Method/Technique	Strengths	Weaknesses
5S	It keeps the workplace tidy and clean, which translates into efficiency and safety	It requires constant commitment and discipline to be effective
Just in Time (JIT)	It minimizes inventory and waste	It is sensitive to supply chain disruptions. It requires careful planning and coordination
Ishikawa diagram	An effective tool for identifying the causes of problems	It does not provide solutions. It requires an in-depth understanding of the process.
Pareto analysis	A powerful tool to identify the most important problems to be solved	It can lead to the overlook of smaller issues that can have large cumulative effects
Balanced Scorecard (BSC)	A comprehensive strategic management tool	It can be difficult to implement and requires commitment at all levels of the organization
Critical Path Method (CPM)	An effective method of project planning	It does not take into account uncertainty and risk
Activity Based Costing	Accurate Costing Method	It can be time-consuming and complicated to implement
Process Map	A useful tool for understanding processes	It can be difficult to maintain when processes change
Kanban	An effective method of workflow management	It requires transparency and open communication to be effective

Source: own elaboration on the base on Alaidaros et al.; Anholon et al., 2017; Bose, 2012; Ghosh, 2017; Kannan, Tan, 2005; Lesakova, Dubcova, Gundová, 2017; Mahdiraji et al., 2016; Nuzhna et al., 2019; Parmentier-Cajaiba, Cajaiba-Santana, 2020; Pavlović et al., 2014; Singh, Vikas, Sharma, 2014.

The 5S method is simple to understand and implement, which makes it attractive to many organizations (Singh, Vikas, Sharma, 2014). However, its effectiveness depends on continued commitment and discipline on the part of employees, which can be difficult to achieve in practice (Anholon et al., 2017). Meanwhile, the *Just-in-time* method is an effective method of reducing inventory and waste, but its effectiveness is vulnerable to supply chain disruptions (Kannan, Tan, 2005). It also requires careful planning and coordination, which can be difficult to achieve in some organizations. The Ishikawa diagram is a tool used to identify causes or problems, which requires an in-depth understanding of the process (Ghosh, 2017). Without training and relevant experience, this can be a huge barrier for staff using the Ishikawa diagram (Bose, 2012). At the same time, it does not provide any way to solve them. On the other hand, Pareto analysis can be a powerful tool for identifying the most important problems to be solved in the hands of the staff (Pavlović et al., 2014). On the other hand, focusing only on the key problems can lead to the omission of these smaller problems, the effects of which can be cumulative.

A comprehensive strategic management tool is the Balanced Scorecard, which requires commitment at all levels of the organization (Lesakova, Dubcova, Gundová, 2017). Another method is the Critical Path Method, which, on the one hand, is effective in planning tasks and

processes, but does not take into account uncertainty and risk (Mahdiraji et al., 2016). This can lead to an underestimation of the time and resources needed to complete tasks and less efficient processes in the organization. Activity Based Costing, on the other hand, provides accurate information about costs, but it can also be time-consuming and complicated to implement, which is often a challenge for organizations with limited resources (Nuzhna et al., 2019). A useful tool for understanding the flow of processes is a process map, which in a changing environment can be unreliable when processes are subject to frequent modifications. This generates the need for continuous monitoring and updating of process maps (Parmentier-Cajaiba, Cajaiba-Santana, 2020). Transparency and open communication in the organization is required from its users by Kanban, which is used to manage the workflow (Alaidaros et al., 2021). This can be a challenge in environments where open communication is lacking. Each of the methods and techniques mentioned above has its own strengths and weaknesses. The key to effective and efficient process management is to identify them and choose the right methods and techniques to apply in a given context according to the needs of the organization.

In conclusion, process management is a key component of any organization's success. The choice of appropriate process management methods and techniques depends on the specifics of the organization, its goals and the context in which it operates (Lenning, 2018). When deciding whether to use any of them, the management of the organization must take into account both their advantages and be aware of their limitations. At the same time, regardless of the chosen method or technique, the key to effective process management is the organization's awareness of the need for continuous improvement and adaptation of its processes to changing environmental conditions.

6. Discussion

Process management is a critical component of any organization's success. Regardless of whether one or another management concept is implemented in the organization, individual methods and techniques of process management are used. Their choice is often dictated by the needs of individual organizations. In some organizations, there is a clear need to improve the quality of processes, in others the focus should be on reducing unnecessary resources and costs. Therefore, each time the selection of appropriate methods and techniques of process management should be preceded by an in-depth analysis of the environment in which it is to be applied. For example, 5S, although easy to understand and implement, requires constant commitment and discipline on the part of employees. Similarly, the *Balanced Scorecard* requires its users to be involved at all levels of the organization (Kaplan, Norton, 1992). However, it can be difficult to implement, as an *Activity Based Costing*, which provides accurate information about the costs incurred by organizations during a specific process

(Straub, 2009). *Just-in-time* enables effective reduction of inventory and waste but is sensitive to any disruption in the supply chain (Ahmed, 2019) supports decision-makers in managing inventory so that it is delivered on schedule and on time.

Pareto analysis is effective in identifying the most important problems that occur, either in a task or in a process, (Talib, Rahman, Queresi, 2010). But those who use it can skip those problems that are smaller, and their effects will only be visible later. The Ishikawa diagram is also used to identify the sources of existing problems, both major and minor (Uksw, 2016). However, its use does not provide users with information on how to solve them. Both the Critical Path Method and Kanban are effective in the hands of experienced users. CPM makes it possible to specify in time the deadlines for the completion of key tasks to complete a given process (Lee, Shvetsova, 2019). It also gives the possibility of adopting time variants for the implementation of tasks, as it specifies both the minimum and maximum time needed to complete individual steps. However, in CPM, management is not able to take into account the uncertainty and risks associated with each process (Mahdiraji et al., 2016). Kanban, on the other hand, will not work in an organization whose stakeholders do not emphasize transparency and communication at all levels of management (Alaidaros et al. 2021).

The same applies to the use of a process map, where teamwork, clarity and transparency of activities in the organization are important (Heinrich et al., 2009). In a safe environment, developing a process map allows you to understand them and their dependencies, but in a high-change environment, it can lead to chaos and wrong decisions about how to perform individual tasks. Different methods and techniques are used at different stages of the management process, from problem identification and analysis, to solution planning and implementation, to monitoring and evaluating results (Benner, Tushman, 2003). The diagram below (Fig. 3) illustrates how different methods and techniques of process management are interrelated, i.e. how they can be coordinated and integrated to achieve a set goal in an organization, but also in a single process.

The stages of the management process are the key phases that organizations go through when managing their processes. Each stage has its own unique goals and challenges, and different process management methods and techniques can be used at different stages to help organizations achieve these goals and meet these challenges. The stages are not rigid and can overlap or iterate depending on the specifics of the organization and the context in which they are applied. The key is continuous improvement and adaptation to changing conditions. At the stage of problem identification and analysis, it is possible to use, m.in, Pareto analysis, to identify significant problems that should be solved (Andriani, Mckelvey, 2011).

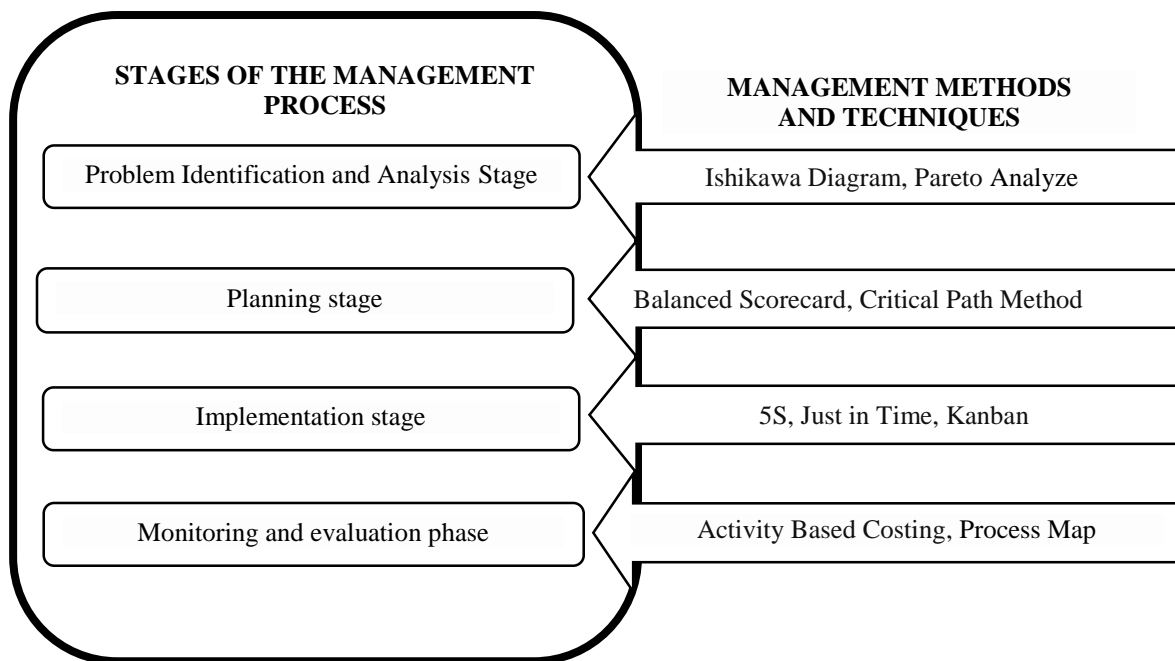


Figure 3. The course of process management with the use of selected methods and techniques.

Source: own elaboration.

On the other hand, the Ishikawa diagram will make it possible to isolate the causes of the problem in the processes carried out in the organization (Coccia, 2017). Moving on to the next stage of planning, you can use BSC for strategic planning in a given organization (Mio, Costantini, Panfilo, 2022), and CPM to determine the timing of individual tasks (Lee, Shvetsova, 2019). During implementation, the 5S technique is a way to maintain order and cleanliness in the workplace (Singh, Vikas, Sharma, 2014), and JIT enables efficient management of necessary resources (Siddiqui, 2022) in parallel with Kanban responsible for workflow control (Dos Santos et al., 2018). In the final stage of monitoring and evaluation within a process, Activity Based Costing can be used (Quesado, Silva, 2021) to accurately estimate costs and a process map to better understand and follow up processes.

These methods and techniques can be used in various combinations and sequences, depending on the specifics and needs of the organization (Lenning, 2018). The literature on the subject does not provide us with a one-size-fits-all scheme of where and how each method or technique is to be used and for which concepts it is most appropriate. What may work within one organization may be undesirable for another, which is why the approach of unambiguously defining what is a method and what is a technique and in what conditions they are applicable is variable.

7. Applications

Process management is a critical component of any organization's success. The essence of process management is to understand how work is done in an organization and then improve those processes to make them more efficient and effective. In this context, various methods and techniques of process management support the achievement of goals in the organization (Lenning, 2018). In different management concepts, different elements of process management play an important role. The key is to understand which methods and techniques are most appropriate for your organization and context, and then implement and apply them effectively.

The conclusions of the analysis suggest that the variables determining the effectiveness of each of the discussed methods and techniques are different. Each of them has its own strengths and weaknesses. In addition, the above considerations suggest that effective process management requires not only the selection of appropriate methods and techniques, but also building a culture of continuous improvement and adaptation to change (Manucharyan, 2021).

This means that organizations must be open to the use of different methods and techniques, they must be ready to support the development of employees, benefit from their experience and continuously improve their processes. Finally, the results of the analysis showed that some methods and techniques can be difficult to implement or resource-intensive. Therefore, it is important for organizations to be aware of these challenges and plan accordingly, paying attention to employee training, change management, and ensuring adequate resources are provided.

8. Recommendations and limitations

Currently, in the practice of management, one can observe a departure from the classic organization, which was based primarily on professional functions and specializations that allow for the accumulation of knowledge, experience and skills (Barkema et al., 2015; David, David, David, 2021). Nor was there a focus on processes whose primary purpose should be to meet customer needs (Barkema et al., 2015). Therefore, organizations, through their human resources, should thoroughly understand the processes and goals they are aiming for before they decide to implement specific methods and techniques of process management. Within the organization, the training of employees in the use of process management should be promoted in order to effectively implement it in the organization using effective methods and techniques. This can also be a challenge for some organizations. At the same time, the authors are aware that the concepts, methods and techniques of process management mentioned in this publication do not exhaust the subject. There are many other actions that should be carefully examined. Nevertheless, the conclusions drawn from the above analysis should be helpful and provide valuable guidance for process management practitioners.

References

1. Abd Rahman, A., Ng, S.I., Sambasivan, M., Wong, F. (2013). Training and organizational effectiveness: moderating role of knowledge management process. *European Journal Of Training And Development*, Vol. 37, Iss. 5, pp. 472-488.
2. Agostino, D., Arnaboldi, M. (2012). Design issues in Balanced Scorecards: The "what" and "how" of control. *European Management Journal*, 30(4), pp. 327-339.
3. Aguilar-Saven, R.S. (2004). Business process modelling: Review and framework. *International Journal of Production Economics*, pp. 129-149.
4. Agus, A. (2004). TQM as a focus for improving overall service performance and customer satisfaction: an empirical study on a public service sector in Malaysia. *Total Quality Management and Business Excellence*, 15(5), pp. 615-628.
5. Alaidaros, H., Omar, M., Romli, R. (2021). The state of the art of agile kanban method: challenges and opportunities. *Independent Journal Of Management & Production*, Vol. 12, Iss. 8, pp. 2535-2550.
6. Alecu, F. (2010). The Pareto Principle in the Modern Economy. *Oeconomics of Knowledge*.
7. Alsyouf, I. (2006). Measuring maintenance performance using a balanced scorecard approach. *Journal of Quality in Maintenance Engineering*, Vol. 12, No. 2, pp. 133-149. <https://doi.org/10.1108/13552510610667165>
8. Andriani, P., Mckelvey, B. (2011). Managing in a Pareto world calls for new thinking. *Management*, Vol. 14, Iss. 2, pp. 89-117.
9. Anholon, R., Quelhas, O.L.G., Novaski, O. (2017). Quality management system for micro and small enterprises. *Sistemas & Gestao*, Vol. 12, Iss. 3, pp. 362-376.
10. Antony, J., McDermott, O., Sony, M., Cudney, E.A., Snee, R.D., Hoerl, R.W. (2021). A study into the pros and cons of ISO 18404: viewpoints from leading academics and practitioners. *The TQM Journal*, Vol. 33, No. 8, pp. 1845-1866. <https://doi.org/10.1108/TQM-03-2021-0065>
11. Aparecida da Silva, L., Pelogia Martins Damian, I., Inês Dallavalle de Pádua, S. (2012). Process management tasks and barriers: functional to processes approach. *Business Process Management Journal*, Vol. 18 No. 5, pp. 762-776. <https://doi.org/10.1108/14637151211270144>
12. Arantes, M.C., Santos, S.F., Simão, V.G. (2023). Process management: systematic review of determining factors for automation. *Business Process Management Journal*, 29(3), pp. 893-910.
13. Armistead, C., Pritchard, J.P., Machin, S. (1999). Strategic business process management for organisational effectiveness. *Long Range Planning*, Vol. 32, Iss. 1, pp. 96-106.

14. Åslund, A., Bäckström, I. (2017). Management processes and management's role in customer value creation. *International Journal of Quality and Service Sciences*, Vol. 9, No. 2, pp. 148-164. <https://doi.org/10.1108/IJQSS-11-2015-0074>
15. Bachmann, N., Jodlbauer, H. (2023). Iterative business model innovation: A conceptual process model and tools for incumbents. *Journal of Business Research*.
16. Ballard, G., Howell, G. (2003). Lean project management. *Building Research & Information*, 31, 2, pp. 119-133. DOI: 10.1080/09613210301997
17. Bandyopadhyay, J.K., Lichtman, R.J. (2007). Six Sigma Approach to Quality and Productivity Improvement in an Institution for Higher Education in the United States. *The International Journal of Management*, 24, p. 802.
18. Bañuelas, R., Antony, J., Brace, M. (2005). An Application of Six Sigma to Reduce Waste. *Quality And Reliability Engineering International*, Vol. 21, Iss. 6, pp. 553-570.
19. Barkema, H.G., Chen, X.P., George, G., Luo, Y.D., Tsui, A.S. (2015). West meets east: new concepts and theories. *Academy Of Management Journal*, Vol. 58, Iss. 2, pp. 460-479.
20. Benner, M.J., Tushman, M.L. (2003). Exploitation, exploration, and process management: The productivity dilemma. *Academy of Management Review*, 28(2), pp. 238-256.
21. Biazzo, S., Bernardi, G. (2003). Process management practises and quality systems standards: Risks and opportunities of the ISO 9001 certification. *Business Process Management Journal*, 9(2), pp.149-169.
22. Bier, T., Lange, A., Glock, C.H. (2020). Methods for mitigating disruptions in complex supply chain structures: a systematic literature review. *International Journal of Production Research*, 58, 6, pp. 1835-1856, DOI: 10.1080/00207543.2019.1687954
23. Bloom, N., Genakos, C., Sadun, R., Van Reenen, J. (2012). Management Practices Across Firms and Countries. *Academy Of Management Perspectives*, Vol. 26, Iss. 1, pp. 12-33.
24. Bose, T.K. (2012). Application of Fishbone Analysis for Evaluating Supply Chain and Business Process-A Case Study on the St James Hospital. *International Journal of Managing Value and Supply Chains*, 3(2).
25. Brocke, J., Zelt, S., Schmiedel, T. (2015). On the Role of Context in Business Process Management. *International Journal of Information Management*, 36. 10.1016/j.ijinfomgt.2015.10.002.
26. Chromjakova, F., Trentesaux, D., Kwarteng, M.A. (2021). Human and Cobot Cooperation Ethics: The Process Management Concept of the Production Workplace. *Journal Of Competitiveness*, Vol. 13, Iss. 3, pp. 21-38.
27. Ciptono, W.S. (2007). Integrate Reengineering and TQM: An Attempt to Redefine Reformation. *The South East Asian Journal of Management*, Vol. 1, No. 1, pp. 83-104. DOI: 10.21002/seam.v1i1.1783
28. Coccia, M. (2017). *The Fishbone diagram to identify, systematize and analyze the sources of general purpose technologies*, 4. pp. 291-303. 10.1453/jsas.v4i4.1518

29. Damanpour, F., Magelssen, C., Walker, R.M. (2020). Outsourcing and insourcing of organizational activities: the role of outsourcing process mechanisms. *Public Management Review, Vol. 22, Iss. 6*, pp. 767-790.
30. Danilova, K.B. (2019). Process owners in business process management: a systematic literature review. *Business Process Management Journal, Vol. 25, No. 6*, pp. 1377-1412. <https://doi.org/10.1108/BPMJ-05-2017-0123>
31. David, M.E., David, F.R., David, F.R. (2021). Closing the Gap between Graduates' Skills and Employers' Requirements: A Focus on the Strategic Management Capstone Business Course. *Administrative Sciences, Vol. 11, Iss. 1*.
32. Dei, D.G.J., van der Walt, T. (2020). Knowledge management practices in universities: The role of communities of practice. *Social Sciences & Humanities Open, Vol. 2, Iss. 1*.
33. DeToro, I., McCabe, T. (1997). How to stay flexible and elude fads. *Quality Progress, 30(3)*, pp. 55-60.
34. Dos Santos, P.S. Beltrão, A., Pedraça de Souza, B., Travassos, G. (2018). On the benefits and challenges of using kanban in software engineering: a structured synthesis study. *Journal of Software Engineering Research and Development*.
35. Douglas, J., Antony, J., Douglas, A. (2015). Waste identification and elimination in HEIs: the role of Lean thinking. *International Journal Of Quality & Reliability Management, Vol. 25, Iss. 9*, p. 970.
36. Draulans, J., deMan, A.P., Volberda, H.W. (2003). Building alliance capability: Management techniques for superior alliance performance. *Long Range Planning, Vol. 36, Iss. 2*, pp. 51-166.
37. Erdil, A., Erbiyik, H. (2019). The Importance of Benchmarking for the Management of the Firm: Evaluating the Relation between Total Quality Management and Benchmarking. *Procedia Computer Science, Vol. 158*, pp. 705-714.
38. Fischbacher-Smith, D. (2017). When organisational effectiveness fails Business continuity management and the paradox of performance. *Journal Of Organizational Effectiveness- People And Performance, Vol. 4, Iss. 1*, pp. 89-107.
39. Gavrilova, T., Andreeva, T. (2012). Knowledge elicitation techniques in a knowledge management context. *Journal Of Knowledge Management, Vol. 16, Iss. 4*, pp. 523-537.
40. Ghosh, S.S. (2017). Financial incentives – a potent weapon for higher productivity. *International Journal of Productivity and Performance Management, Vol. 66, Iss. 4*, pp. 554-571.
41. Heinrich, B., Henneberger, M., Leist, S., Zellner, G. (2009). The process map as an instrument to standardize processes: design and application at a financial service provider. *Information Systems And E-Business Management, Vol. 7, Iss. 1*, pp. 81-102.
42. Hellström, A., Eriksson, H. (2013). Among Fumblers, Talkers, Mappers and Organizers - Four applications of process orientation. *Total Quality Management and Business Excellence, Vol. 24(5-6)*, pp. 733-751.

43. Holloway, J., Hinton, C., Mayle, D., Francis, G. (1997). *Why benchmark? Understanding the processes of best practice benchmarking.*
44. Isaksson, R. (2006). Total quality management for sustainable development: Process based system models. *Business Process Management Journal, Vol. 12, No. 5*, pp. 632-645.
45. Islam, S.A., Hossain, S.M., Hassan, M., Yeasmin, N. (2015). Improving workplace by using 5'S tool - A typical application of sorting method. *International Journal of Services and Operations Management, Vol. 22, Iss. 3*, pp. 323-335.
46. Jarvenpaa, S.L., Stoddard, D.B. (1998). Business Process Redesign: Evolutionary Change, *Journal of Business Research, Vol. 41, Iss. 1*, pp. 15-27.
47. Jasti, N.V.K., Venkateswaran, V., Kota, S., Sangwan, K.S. (2022). A literature review on total quality management (models, frameworks, and tools and techniques) in higher education. *The TQM Journal, Vol. 34, No. 5*, pp. 1298-1319. <https://doi.org/10.1108/TQM-04-2021-0113>
48. Kadarova, J., Demecko, M. (2016). New Approaches in Lean Management. *Procedia Economics and Finance, 39*, pp. 11-16. 10.1016/S2212-5671(16)30234-9
49. Kannan, V.R., Tan, K.C. (2005). Just in time, total quality management, and supply chain management: understanding their linkages and impact on business performance. *Omega Vol. 33, Iss. 2*, pp. 153-162.
50. Kohlbacher, M., Gruenwald, S. (2011). Process ownership, process performance measurement and firm performance. *International Journal of Productivity and Performance Management, 60(7)*, pp. 709-720.
51. Kubicová, J. (2015). Reengineering - Concept and review of Literature. *Management - Science and Education, 3*, pp. 41-46.
52. Laureani, A., Antony, J. (2019). Leadership and Lean Six Sigma: a systematic literature review. *Total quality management & business excellence, Vol. 30, Iss. 1-2*, pp. 53-81.
53. Lee, H.W., Pak, J., Kim, S., Li, L.Z. (2019). Effects of Human Resource Management Systems on Employee Proactivity and Group Innovation. *Journal Of Management, Vol. 45, Iss. 2*, pp. 819-846.
54. Lee, R.G., Dale, B.G. (1998). Business process management: a review and evaluation. *Business Process Management Journal, Vol. 4 No. 3*, pp. 214-225. <https://doi.org/10.1108/14637159810224322>
55. Lee, S., Shvetsova, O.A. (2019). Optimization of the Technology Transfer Process Using Gantt Charts and Critical Path Analysis Flow Diagrams: Case Study of the Korean Automobile Industry. *Processes, Vol. 7, Iss. 12*.
56. Lee, S.H. (2020). Design outsourcing management: Mitigating risks and achieving objectives. *Creativity and Innovation Management, Vol. 29, Iss. 4*, pp. 719-731. <https://doi.org/10.1111/caim.12411LEE731>
57. Lenning, J. (2018). Auditing of explorative processes. *Total Quality Management & Business Excellence, Vol. 29, Iss. 9-10*, pp. 1185-1199.

58. Lesakova, L., Dubcova, K., Gundova, P. (2017). The knowledge and use of the balanced scorecard method in businesses in the Slovak Republic. *E & M Ekonomie A Management*, Vol. 20, Iss. 4, pp. 49-58.
59. Linderman, K., Schroeder, R.G., Sanders, J. (2010). A Knowledge Framework Underlying Process Management. *Decision Sciences*, Vol. 41, Iss. 1, pp. 689-719.
60. Macdonald, E.K., Kleinaltenkamp, M., Wilson, H.N. (2016). How Business Customers Judge Solutions: Solution Quality and Value in Use. *Journal of Marketing*, 80(3), pp. 96-120. <https://doi.org/10.1509/jm.15.0109>
61. Macintosh, R., Maclean, D. (1999). Conditioned emergence: A dissipative structures approach to transformation. *Strategic Management Journal*, Vol. 20, Iss. 4, pp. 297-316.
62. Mahdiraji, H.A., Hajiagha, S.H.R., Hashemi, S.S., Zavadskas, E.K. (2016). A grey multi-objective linear model to find critical path of a project by using time, cost, quality and risk parameters. *E & M Ekonomie A Management*, Vol. 19, Iss. 1, pp. 49-61.
63. Manucharyan, H. (2021). Multi-criteria decision making for supplier selection: a literature critique. *Independent Journal Of Management & Production*, Vol. 12, Iss. 1, pp. 329-352.
64. Mio, C., Costantini, A., Panfilo, S. (2022). Performance measurement tools for sustainable business: A systematic literature review on the sustainability balanced scorecard use. *Corporate Social Responsibility and Environmental Management*, 29(2), pp. 367-384. <https://doi.org/10.1002/csr.2206>
65. Navarro, P. (2021). Applying quality concepts to achieve environmental sustainability in the freight transport sector – reviewing process management and lean. *International Journal of Quality and Service Sciences*, Vol. 13, No. 4, pp. 545-562. <https://doi.org/10.1108/IJQSS-02-2020-0029>
66. Nuzhna, O., Tluchkevych, N., Semenyshena, N., Nahirska, K., Sadovska, I. (2019). Making managerial decisions in the agrarian management through the use of abc-analysis tool. *Independent Journal Of Management & Production*, Vol. 10, Iss. 7, pp. 798-816.
67. Parkes, A. (2015). Lean Management Genesis. *Management*, 19(2), pp. 106-121. <https://doi.org/10.1515/manment-2015-0017>
68. Parmentier-Cajaiba, A., Cajaiba-Santana, G. (2020). Visual Maps for Process Research: Displaying the Invisible. *Management*, Vol. 23, Iss. 4, pp. 65-79.
69. Patel, A., Chudgar, C. (2020). Understanding basics of Six Sigma. *International Journal of Engineering Research and*. V9. 10.17577/IJERTV9IS050866.
70. Pavlović, D., Todorović, M., Mladenović, S., Milosavljević, P. (2014). The role of quality methods in improving education process: case study. *Serbian Journal of Management*, 9(2), pp. 219-230.
71. Ponsignon, F., Smart, P.A., Maull, R.S. (2012). Process design principles in service firms: Universal or context dependent? A literature review and new research directions. *Total Quality Management & Business Excellence*, 23, 11-12, pp. 1273-1296. DOI: 10.1080/14783363.2011.637797

72. Prajogo, D.I., Sohal, A.S. (2003). The relationship between TQM practices, quality performance, and innovation performance: An empirical examination. *International Journal of Quality & Reliability Management*, Vol. 20, No. 8, pp. 901-918. <https://doi.org/10.1108/02656710310493625>
73. Pun, S.K., Liu, C.L., Langston, C., Treloar, G. (2007). Electronic waste exchange for just-in-time building demolition. *International journal of construction management*, Vol. 7, Iss. 2, pp. 65-77.
74. Qian, C., Yu, K., Chen, N., Shen, W., Hou, S., Lei, W. (2023). When to adopt a new process management standard? An organizational learning perspective. *International Journal of Production Economics*, 263.
75. Quesado, P., Silva, R. (2021). Activity-Based Costing (ABC) and Its Implication for Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7, 41. [10.3390/joitmc7010041](https://doi.org/10.3390/joitmc7010041).
76. Raman, R.S., Basavaraj, Y. (2019). Quality improvement of capacitors through fishbone and pareto techniques. *International Journal of Recent Technology and Engineering*, Vol. 8, Iss. 2, pp. 2248-2252.
77. Reynders, P., Kumar, M., Found, P. (2022). Lean on me!: an integrative literature review on the middle management role in lean. *Total quality management & business excellence*, Vol. 33, Iss. 3-4, pp. 318-354.
78. Rolínek, L., Vrchota, J., Kubecová, J., Švárová, M. (2014). The level of process management principles application in SMEs in the selected region of the Czech Republic. *Serbian Journal of Management*, 9(2), pp. 203-217.
79. Saravia-Vergara, E., Sanchís-Pedregosa, C., Albort-Morant, G. (2023). Organizational Culture, Process Management and Maturity of the Process: An Empirical Study of the Process Status in Peru. *Global Business Review*, 24(2), pp. 258-280. <https://doi.org/10.1177/0972150920916036>
80. Schoensleben, P. (2010). Cost Estimating, Job-Order Costing, and Activity-Based Costing. *Resource Management*.
81. Segatto, M., Inês, D.de P.S., Pinheiro, M.D. (2013). Business process management: a systemic approach? *Business Process Management Journal*, 19(4), pp. 698-714.
82. Siddiqui, A. (2022). The Importance of Just in Time (JIT) Methodology and its Advantages in Health Care Quality Management Business – A Scoping Review. *Biomedical Reviews*, 42, pp. 1-9. [10.26717/BJSTR.2022.42.006701](https://doi.org/10.26717/BJSTR.2022.42.006701).
83. Singh, J., Vikas, R., Sharma, R. (2014). Implementation of 5S practices: A review. *Uncertain Supply Chain Management*, 2, pp. 155-162. [10.5267/j.uscm.2014.5.002](https://doi.org/10.5267/j.uscm.2014.5.002).
84. Snell, S.A., Dean, J.W. Jr (1992). Integrated manufacturing and human resource management: A human capital perspective. *Academy of Management Journal*, 35, pp. 467-504.

85. Sonteya, T., Seymour, L. (2012). Towards an Understanding of the Business Process Analyst: An Analysis of Competencies. *Journal of Information Technology Education: Research*, 11, pp. 043-063.
86. Straub, A. (2009). Cost savings from performance-based maintenance contracting. *International Journal Of Strategic Property Management*, Vol. 13, Iss. 3, pp. 205-217.
87. Suša Vugec, D., Tomičić-Pupek, K., Vukšić, V.B. (2018). Social business process management in practice: Overcoming the limitations of the traditional business process management. *International Journal of Engineering Business Management*, 10. doi:10.1177/1847979017750927
88. Sweeney, M.T. (1994). Benchmarking for Strategic Manufacturing Management. *International Journal of Operations & Production Management*, Vol. 14, No. 9, pp. 4-15. <https://doi.org/10.1108/01443579410066703>
89. Talib, F., Rahman, Z., Queresi, M.N. (2010). Pareto analysis of total quality management factors critical to success for service industries. *International journal for quality research*, 2, pp. 155-168.
90. Tayauova, G. (2012). International Conference on Leadership, Technology and Innovation Management Advantages and disadvantages of outsourcing: analysis of outsourcing practices of Kazakhstan banks. *Procedia - Social and Behavioral Sciences*, 41, pp. 188-195.
91. Ubaid, A.M., Dweiri, F.T. (2020). Business process management (BPM): terminologies and methodologies unified. *International Journal of System Assurance Engineering and Management*, 11, pp. 1046-1064.
92. Uksw, S. (2016). The Application of Fishbone Diagram Analisis to Improve School Quality. *Dinamika Ilmu.*, 16, pp. 59-74.
93. Zatar, T. (2022). Achieving firm financial performance through the just-in-time supply chain, quality management, and supply chain integration: the moderating role of it advancement. *Marketing And Management Of Innovations*, Iss. 4, pp. 136-151.
94. Zitkiene, R., Dude, U. (2018). The impact of outsourcing implementation on service companies. *Entrepreneurship and Sustainability Issues*, *Entrepreneurship and Sustainability Center*, 6/1, pp. 342-355.