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Unified Algorithm for Business Process Management Implementation

Abstract
Purpose. This article is supposed to present a theoretical substantiation and practical development of a universal step-by-step algorithm for implementing the process approach, which is based on the integration of modern theoretical concepts, empirical studies and practical recommendations. With this objective in view, the article explores the essence of the concept and theoretical foundations of the process approach, analyzes existing methodologies, identifies the main stages of implementing the process approach and proposes a unified algorithm for introducing a BPM (Business Process Management) approach. *Methodology*. The study employs a literature review, content analysis, comparative method, the structural and functional approach, as well as the generalization of international and national experience in implementing BPM methodologies. *Results of the survey*. The analysis of theoretical developments and practical cases was conducted; evolutionary concepts of the process approach were studied; and modern Business Process Management techniques were described, including Lean, Six Sigma, BPR, TQM, PDCI, Process Mining and others. *Research results*. The findings of the study indicate a considerable number of developments related to the implementation of the process approach, which demonstrate their effectiveness, but also create difficulties in practical application due to their specific features and the absence of a clearly structured algorithm for implementing BPM approach. *Practical implications*. A unified algorithm for implementing the process management is proposed based on the results of the study. This algorithm enables the implementation of the process approach regardless of the level of process maturity of the managed entity. The proposed algorithm can serve as an effective tool for achieving qualitative changes through the implementation of efficient process management. *Value / originality*. The originality of this research lies in the integration of modern process management concepts into a single, structured and unified algorithm for implementing the process management, as well as in the development of an applied approach adapted to the needs of management entities of various industry orientations..

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1 Introduction

In the conditions of rapid changes in the global business environment, intensification of competition and growth of consumer demands for the quality of products and services, traditional management approaches are losing their effectiveness. This necessitates the introduction of flexible and adaptive management approaches capable of maintaining the stability of operational processes while ensuring their continuous improvement. In this regard, the process approach to management gains newfound

relevance. Its distinctive features include a focus on end-result efficiency, transparency of business processes and constant improvement of their quality. The application of the process approach contributes to increasing efficiency, reducing costs and strengthening competitiveness of business entities. For Ukrainian enterprises, implementing the process-oriented approach to management should become an effective mechanism for economic recovery in the post-war period, and it is expected to ensure the integration of Ukrainian producers into global economic chains, thereby contributing to the sustainable development of the country under conditions of uncertainty.

The main challenge in integrating this approach lies in the absence of a comprehensive process system or partly specified process architecture, insufficient level of process maturity to meet the requirements of the management entity or the need to fundamentally revise the existing process paradigms. In view of the above, the systematization of approaches and practices for using the process approach, as well as the development of a universal algorithm for its implementation across any field of activity is growing more urgent.

2 Theoretical and Methodological Foundations of the Process Approach

A review of scientific studies on the essence and principles of the process approach management allows for the conclusion that this approach represents a comprehensive management methodology based on the systematic identification, analysis, optimization, modeling and control of business processes thereby achieving strategic objectives.

The formulation of the concept of process management began in the first half of the 20th century and was related to conceptual transformations in management thought. The deep theoretical foundations of the process approach originated in the works of the classical management theorists, including Frederick Taylor, Henri Fayol, Edward Deming and Joseph Juran.

Frederick Taylor initiated the logic and fundamental principles of the process approach, which later constituted grounds for shaping this managerial concept. Taylor proposed a clear structure, standardization and process control, thereby laying the groundwork for future approaches to process management at the level of executive operations (Taylor, 1911).

Another classic management thinker, Henri Fayol, proposed a universal model of management based on five key functions: Planning, Organizing, Commanding (Leading), Coordinating and Controlling. His approach emphasizes the role of the manager and the organization as a whole considering BPM at the organizational level as a system for coordinating functions and achieving objectives (Fayol, 1916).

Edward Deming focused on continuous process improvement and quality management, laying the groundwork for modern process management through the Plan-Do-Check-Act (PDCA) cycle. The essence of this cycle lies in viewing management as a continuous process of planning, implementation, monitoring and improvement (Deming,1986).

Joseph Juran contributed to the process approach by highlighting the concept of "spiral process improvement", systematic quality management and the focus on customer value. He proposed the quality trilogy (Juran Trilogy), which includes quality planning, quality control and quality improvement (Juran, 1988).

W. E. Deming and J. M. Juran played a critical role in the development of the process approach, as they shifted the process management from a purely technical view to a systemic perspective, where quality and efficiency are embedded in every stage of the management cycle. Their models (the PDCA cycle and the quality trilogy) have become integral components of modern BPM practices.

The process approach gained significant momentum in the 1980s and 1990s at the intersection of ideas of scientific management of business processes and the introduction of the reengineering concept, proposed by M. Hammer and J. Champy for replacing the traditional functional approach with a radical reconfiguration of organizational activities around the process system (Hammer & Champy, 1993).

However, it should be emphasized that a major breakthrough in the development of the process approach was the formulation and elaboration of "process thinking" as a prerequisite for any transformation (Smart et al, 2009).

Contemporary paradigms of the process approach have been further elaborated in numerous scholarly works. Foreign researchers define the process approach as a conceptual management methodology based on methods, techniques and tools for identifying, analyzing, executing, monitoring and improving the business processes Dumas at el, 2018), designing their models using collected data, as well as optimizing and automating processes by engaging human, technological and financial resources (Ahmad & Van Looy, 2020) in order to enhance efficiency, effectiveness and flexibility of organizational activities.

A similar definition is given by Ukrainian scientists, who describe the process management as a system of sequential actions for identifying, modeling, analyzing, optimizing and controlling business processes, aimed at achieving the strategic objectives of an enterprise (Kraievska & Yablonskyi, 2025).

Other Ukrainian researchers define the process approach as the foundation of management, which incorporates a systemic model, principles and methods of governance (Kozenkov et al, 2022), and encompasses the identification, monitoring and interaction of

processes in order to ensure the competitiveness and adaptability of the management entity (Filina et al, 2022).

Summarizing the above, it can be said that the process approach can be understood as an integration of methodology and culture of business process management (BPM). In turn, process management represents a holistic management system characterized by the core attributes: principles, tools, conditions and methods.

The academic literature highlights the fundamental elements of the process approach, although different authors describe the set of relevant components in various ways.

Traditionally, researchers distinguish five core elements of process management: Strategy, People, Culture, Technology and Governance. Strategy sets the directions of change and the priorities for process improvement. People or personnel are involved in the design and implementation of processes. Culture, as a fundamental element of the process approach, provides support for innovations and changes in process design. Technologies for managing business processes (BPMS – Business Process Management Systems) enable automation, visualization and control of process execution. Control and governance of processes are carried out through defining roles and responsibilities, setting regulations and establishing Key Performance Indicators (KPIs) (Dumas et al., 2018).

The scientific literature presents classical approaches to the classification of elements of the process approach. Proponents of this approach argue that the fundamental elements of the process approach include the process itself, process participants and owners, external and internal customers, resources and the final product. An important task of this approach is the identification, detailing, description and improvement of processes. Process detailing is carried out using notations like Business Process Model and Notation (BPMN), Event-driven Process Chains (EPC) and Integrated Definition for Function Modeling (IDEF0), which enable the creation of business process maps that detail key components, measurement methods and strategies for improvement of process system (Kozenkov et al, 2022).

In the most recent approach, known as Agile Business Process Management (Agile BPM), the authors place the emphasis on the key elements of business processes that form the foundation for the flexible methodology of process management. Proponents of this approach highlight such components as clearly defined goals, performance metrics, responsible officers, technological solutions and continuous improvement. The authors emphasize that Agile BPM represents a combination of elements that enable organizations to remain flexible, adaptive and customer-oriented in the face of contemporary business challenges.

3 Process Management Methodologies

The practical toolkit of the process approach includes numerous methodologies that enable the integration of technological, managerial and analytical aspects of management into the activities of the managed entity. In this context, particular attention is drawn to such methodologies as Lean methodology, Six Sigma, Total Quality Management (TQM), Business Process Reengineering (BPR), Process Mining and the PDCI cycle, which provide different levels of in-depth analysis, management and improvement of business processes. These methodologies have their own specific advantages, areas of application and limitations, which necessitates their comparative analysis.

PDCI (Plan–Do–Check–Improve) is an evolutionary methodology that extends the classical Deming cycle. PDCI serves as a tool for continuous improvement in process management, which is widely applied within quality standards (Deming, 1986).

This methodology represents a fundamental mechanism of ongoing organizational enhancement of business processes, based on iterative experimentation, data analysis and adaptive learning. The relevant approach has become a key element and foundation for the majority of process approach methodologies.

The Lean methodology is one of the leading concepts in the field of business process optimization, which involves identifying and eliminating non-value-adding activities (Bhamu & Sangwan, 2014). This concept emphasizes the process visualization, standardization and enhanced adaptability through techniques like Value Stream Mapping, continuous improvement (Kaizen), visual management and the standardization of operations (Nikiforova & Bicevska, 2020). The corresponding methodology ensures rapid implementation of changes and serves as an effective tool for maintaining stable operational processes.

The Six Sigma methodology is a modern tool for business process improvement focusing on reducing the number of defects and ensuring stability of process execution. Its primary objective is to achieve the highest possible quality through in-depth statistical analysis, a systematic approach to improvement and in-depth control of process execution. A key element of Six Sigma is the DMAIC cycle (Define – Measure – Analyze – Improve – Control), which provides a structured approach to process improvement (Pyzdek, 2014; Antony et al., 2018).

Total Quality Management (TQM) is a methodology based on the philosophy of comprehensive quality management predicated on the principle of continuous improvement, employee involvement, customer orientation and data-driven decision-making. The TQM methodology is focused on the processes as objects of management and standardization (Oakland, 2014).

Business Process Reengineering (BPR) is a methodology focused on the fundamental rethinking

and radical redesign of business processes to achieve significant improvements in critical performance indicators (Hammer & Champy, 1993). This approach is particularly effective when dealing with systemic problems or when transformational change is required.

Process Mining is a modern methodology for business process optimization that integrates business analytics with tools for detecting the actual course of processes based on digital data within information systems (Aalst, 2016). This approach helps identify deviations, bottlenecks and opportunities for automation of management.

It is worth noting that the scientific literature presents a wide variety of process management methodologies, each with distinct advantages on the conditions and needs of the organization. The Lean and PDCI methodologies focus on continuous improvement of business processes. Six Sigma involves process improvement by analyzing and controlling variability. TQM is a comprehensive philosophy of process management built on a culture of quality. BPR represents the most radical approach oriented toward a complete "reset" of the management system. Process Mining provides a digital foundation for verifying and optimizing real processes, thereby refining all other approaches.

4 Algorithm for Implementing the Process Approach

A retrospective analysis of scientific sources has shown that the step-by-step implementation of process approach has been widely covered in academic publications. The generalization of modern concepts makes it possible to identify the typical stages of Business Process Management (BPM), which enable organizations to reform their management processes effectively and achieve strategic objectives.

In his research, Paul Harmon highlights five sequential phases such as analysis of current processes (As-Is), modeling of future processes (To-Be), implementation of changes, monitoring and control (Harmon, 2003).

A similar multi-level model is proposed in the works of Hajo A. Reijers and Brina Buh, who distinguish five key stages: recognition of the need for change, formation of internal drivers and supporters, implementation of pilot projects, development of a BPM strategy and establishment of a Center of Excellence (CoE) responsible for coordinating and standardizing BPM practices (Reijers et al. and Buh et al.,2015).

According to Zuhaira and Ahmad, BPM encompasses modeling, analysis, implementation and ongoing process management utilizing specialized IT solutions (Zuhaira & Ahmad, 2021).

Aloshyna proposes a universal model dividing the process of implementing the process approach into four stages, including needs identification, development of a project for implementing the process approach, implementation of proposed measures and control (Aloshyna et al, 2024).

Summarizing the research findings (Buh et al., 2015; Reijers et al., 2010; Harmon, 2003), it can be said that implementing the process approach involves the global or partial construction of processes and their realignment, which requires continuous research and improvement based on innovative technologies. The conducted studies allowed creating a unified algorithm for implementing Business Process Management across various management domains.

The unified algorithm for implementing Business Process Management is presented in Table 1.

The authors propose an eight-stage system for implementing the process approach, which includes analyzing prerequisites for implementing the process approach, process mapping, identification of key processes, optimization or radical redesign of processes, selection of tools for redesign, pilot implementation, control, monitoring and continuous improvement.

The initial stage involves an in-depth assessment of the operating environment of the managed entity through analyzing stakeholders and assessing organizational culture, available resources (human, financial, technological) and the level of digital maturity of the enterprise. This analysis is crucial for developing a realistic roadmap for implementing the process approach. At this stage particular attention is given to identifying barriers to change resistance, analyzing stakeholders and conducting a preliminary diagnosis of BPM maturity in accordance with the Capability Maturity Model (CMM) approaches.

The next stage involves developing a business process model based on standardized notations. At the relevant stage, the processes should be classified according to their functional characteristics (operational, managerial, supporting), as well as by criticality, repetitiveness, frequency and impact on key outcomes. The creation of a visual process map serves as the foundation for implementing the process approach or for further optimization of those processes.

At the third stage, it is necessary to identify the processes that have the highest potential in the activity of the managed entity, but require redesign to ensure maximum effect under conditions of optimization. The selection criteria may include strategic importance, riskiness, low efficiency, intensiveness, as well as the frequency of errors or complaints.

The stage of radical or step-by-step improvement of business processes involves a fundamental transformation of the process logic. The choice of approach depends on the scale of changes, the level of risks and the expected outcomes.

Technological support is implemented through specialized platforms. The selection of tools

TABLE 1 Unified algorithm process management implementing

Stage	Rationale	Tools
Pre-implementation analysis	Prior to implementing process management or undertaking its transformation, it is essential to assess the organization's readiness for change, its resource capacity, the influence of the external environment, and to identify key stakeholders.	SWOT analysis; PESTLE analysis; Stakeholder analysis; Organizational Culture Assessment Instrument (OCAI).
Process mapping	Business process visualization enables a systematic view of their structure, interrelationships, and execution logic, providing the foundation for subsequent optimization.	BPMN; IDEF0; SIPOC diagrams; Value Stream Mapping.
Selection of key processes	Focusing on the most critical processes enables quick wins, cost reduction and concentration on customer value.	Eisenhower matrix; Pareto analysis; KPI analysis; ABC/XYZ analysis.
Reengineering / optimisation	Reengineering entails the radical rethinking and redesign of processes to achieve substantial improvements in cost, quality, service, or speed. Optimization targets the elimination of waste and the reduction of variation-induced errors.	Business Process Reengineering (BPR); Lean techniques (5S, Kaizen, Kanban); Six Sigma (DMAIC).
Tool selection	Digitising processes allows automation of routine operations, system integration, and greater flexibility and transparency of management.	BPMS; SOA; BAM; ERP systems.
Pilot implementation	Piloting allows new processes to be tested under controlled conditions, reducing risks and adapting innovations prior to scale-up.	Agile/Scrum approach; test environments; staff training programmes; Change Management Framework.
Performance monitoring & control	Regular monitoring provides an objective assessment of change effectiveness. In addition to key indicators, organisations should assess socially responsible management.	ESG metrics; KPIs; Balanced Scorecard; dashboards; control charts.
Continuous improvement	Ongoing improvement of processes is based on an iterative cycle that supports the gradual evolution of the business system.	CMMI; PDCA / PDCI; Kaizen.

Source: developed by the author

depends on the process complexity, integration needs, scalability, task automation and monitoring requirements. The IT infrastructure must provide flexibility, ensure compatibility with ERP/MES systems and enable real-time analytics to support operations.

At the stage of pilot implementation, the updated processes are test-launched within a specific unit of the managed entity. Particular attention is paid to staff training, adapting functional roles, evaluating readiness for change and creating feedback mechanisms. A successful pilot implementation helps identify bottlenecks, conduct A/B testing of solutions and improve models before scaling up.

The controlling stage is accompanied by the introduction of a process monitoring system focused not only on traditional KPI indicators, but also on ESG (Environmental, Social and Governance) metrics. Monitoring environmental performance, social impact and managerial responsibility contributes to the sustainable development of the managed entity.

The final stage is implemented within the process maturity of the managed entity. According to the proposed algorithm, the managed entity gradually progresses from a basic level (initial processes) to an optimized level (integration, automation, and adaptability). Key characteristics at this stage include establishing a BPM Center of Excellence, developing internal expertise and implementing knowledge management methods, enabling not only the maintenance of stability, but also continuous adaptation to changes in the external environment.

The proposed algorithm facilitates the adoption of the process approach irrespective of the level of process maturity of the managed entity, because the assessment of prerequisites provides insight into the course of implementation of process management. At the same time, the presence of specific conditions determines progression through stages by enabling advancement to the next stage when requirements are met or, conversely, pausing at a particular stage, depending on the development conditions, level of effectiveness and readiness of the managed entity.

5 Conclusions

A retrospective analysis of the literature confirms the effectiveness of process management methodologies as one of the most efficient contemporary management concepts. The process approach to management is a framework that views any activity as a network of interconnected business processes focused not on the functional structure of the managed entity, but on the end result, namely, on creating goods or services that are valuable for external or internal consumers. The basis of the process approach is the orientation toward processes as system elements, where each process has its own attributes and structure and ensures the creation of value for the end consumer. This approach represents the quintessence of best practices for improving business processes and managing results, the combination of which can enhances the efficiency

of management system and boost competitiveness in a dynamic market environment characterized by intense competition.

Implementing the process approach or improving the process system leads to enhanced quality of goods (products) and services, reduced transaction costs, faster operations, improved internal structure of processes and greater adaptability to external changes.

The variability of process management methodologies allows organizations to tailor the relevant approach to various business entities leading to distinct quantitative and structural variations in the course of its implementation.

In the author's opinion, an algorithm for implementing the process approach should be unified and integrate principles from various methodologies. This unification aims to enable the creation or adjustment of existing processes across different developmental stages of a managed entity.

The proposed algorithm for implementing the process approach represents a scientifically grounded, multi-level model for implementing a process approach, designed to achieve systemic transformations, minimize organizational risks and create a flexible environment for adapting management processes to dynamic environmental changes.

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