
Integration of Project and Process Approaches in the Management of Construction Companies: Results of an Empirical Study

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Abstract:

Purpose: The purpose of this paper is to evaluate the degree of implementation of process-oriented management in Polish construction enterprises and to identify the key factors influencing the level of process formalization and the use of Business Process Management (BPM) tools. The study also explores the relationship between project-oriented and process-oriented approaches in the context of the construction industry, emphasizing the coexistence of standardized operations and unique project activities.

Design/Methodology/Approach: The research was conducted using a quantitative approach based on a CAWI (Computer Assisted Web Interview) survey distributed among representatives of 14 construction companies of various sizes and organizational structures. The questionnaire included both descriptive and diagnostic questions, enabling the assessment of process maturity, the degree of process documentation, and the application of BPM tools such as process mapping and ISO 9001:2015 systems. Respondents represented different organizational levels – from project managers and site engineers to senior executives – which allowed for a multidimensional analysis of process awareness within enterprises.

Findings: The results indicate that most surveyed companies have formally documented processes, particularly in core operational areas, which demonstrates an increasing level of process awareness. However, the implementation of BPM tools remains partial and inconsistent. Only half of the respondents confirmed the use of process mapping, and approximately one-third declared the implementation of ISO 9001-based quality management systems. The level of process formalization was found to be positively correlated with company size — larger enterprises more frequently adopt systemic BPM practices, while micro and small firms rely on informal, experience-based methods. The study reveals that construction enterprises are in a transitional phase between intuitive project-based management and integrated process management.

Practical Implications: The findings underline the need for further development of process-oriented culture in construction companies, particularly through managerial education, process standardization, and integration of BPM principles with project management frameworks. The results can serve as a reference point for comparative studies in other project-based sectors, such as manufacturing or IT, and as practical guidance for organizations seeking to enhance their process maturity.

Originality/Value: This study contributes to the limited body of empirical research on BPM in the construction industry by providing insights into the actual level of process maturity

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and the barriers to BPM implementation in Polish construction firms. It bridges the theoretical gap between process and project management approaches and highlights the contextual factors shaping process management practices in a highly dynamic and project-driven sector.

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JEL Codes: *L74, M11, D2.*

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1. Introduction

Today's organisations operate in an environment of increasing environmental complexity, competitive pressures and the need to continuously improve operational efficiency. The process approach, which has been one of the main management paradigms since the end of the 20th century, has become the answer to these challenges.

This concept assumes that an organisation can be seen as a system of interrelated processes with the common goal of creating value for the customer and ensuring consistency of activities across different areas of activity. In contrast to the traditional functional management approach, process orientation focuses on the flow of value and information, crossing departmental and job boundaries (PN-EN ISO 9001:2015-10).

The construction industry is inherently project-based, as each investment represents a unique, time-constrained endeavor with distinct objectives, stakeholders, and resource configurations. Despite the repetitive nature of certain operational activities, the dominant mode of organizing work remains project-oriented, which shapes how processes are planned, executed, and improved within construction enterprises (Siamuzwe-Manase *et al.*, 2024).

Growing interest in process management can be seen in many sectors of the economy, but its practical implementation in the construction industry faces particular difficulties. The specific nature of construction activities - the project-based nature of projects, the temporary nature of teams, the complexity of coordinating activities and the involvement of numerous external parties - means that process management requires particular adaptation of tools and methods.

In construction, processes are both repetitive in nature (e.g. investment preparation, quality control, procurement, supervision of implementation) and one-off, resulting from the individual characteristics of each project. It is this combination of project and process approaches that constitutes the essence of contemporary management challenges in this sector (Hoła and Polak, 2012).

The purpose of this article is to assess the degree of implementation of the process approach in construction companies and to identify factors influencing the level of formalisation of activities and the use of process management tools. The article presents the results of an empirical study conducted among representatives of construction companies, diverse in terms of size, structure and nature of operations. Particular attention was paid to the analysis of the relationship between the position of employees and their awareness of and involvement in process activities.

The theoretical part of the study presents the basic assumptions of the process management concept and the specifics of its implementation in the construction industry, while the empirical part contains an analysis of the survey results. The obtained results allow the formulation of conclusions regarding the current level of process maturity in construction companies and the determination of directions of actions conducive to the further development of this concept in practice.

2. Literature Review

2.1 Process Management

Process management has been one of the key strands of contemporary organisational and management theory for several decades. Its main premise is to treat the organisation as a system of interrelated processes that together create value for the customer (PN-EN ISO 9001:2015-10).

Unlike the traditional functional approach, which focuses on vertical structure and the division of tasks by department, the process approach focuses on horizontal flows of work and information. This approach allows the identification of value-added locations, as well as areas of loss, redundancy and bottlenecks (Murdzek, 2020).

The concept of process is defined variously in the literature, but most authors emphasise its repetitive, sequential and result-oriented nature. Davenport (1993)

defines process as a set of activities that transform inputs into outputs, bringing value to the customer. Hammer (1999) point out that process is interdisciplinary in nature as it runs across traditional organisational structures. Rummler and Brache (2012), on the other hand, emphasise that process management means not only the improvement of individual activities, but also the coordination of a whole system of activities leading to the realisation of the organisation's strategy.

Business Process Management (BPM) is a combination of organisational, technological and cultural aspects. In practice, it involves the identification of processes, their mapping, analysis, standardisation and continuous improvement. The aim is to achieve consistency between the organisation's strategy and the way in which operational activities are carried out.

BPM also implies clearly identifying process owners and assigning them responsibility for the effectiveness of the implementation of activities. This makes it possible both to monitor performance on an ongoing basis and to react quickly to inconsistencies or deviations from established standards (Grajewski, 2014).

One of the basics of process management is the concept of continuous improvement, implemented based on the PDCA (Plan-Do-Check-Act) cycle by Deming. This model reflects the assumption that organisational processes should be continuously planned, controlled and improved to increase the efficiency and quality of the results. Incorporating this approach into process management structures allows the organisation to remain flexible and adapt to changes in the market environment (Murdzek, 2020).

2.2 Process Management Methods and Tools

Implementing process management requires the use of tools to describe, analyse and improve the course of activities. The most commonly used method is process mapping, which allows the course of the process to be presented graphically - from the input, through the subsequent stages, to the output and final customer.

Process maps make it possible to identify recurring problems, decision points, areas of delay or excessive complexity. In project-based organisations, such as construction companies, this tool is particularly important as it facilitates the synchronisation of activities between work teams and external partners (Grajewski, 2014).

Among the tools supporting process analysis, it is worth mentioning SIPOC (Suppliers-Inputs-Process-Outputs-Customers), a diagram that allows the boundaries of a process and its key relations to be identified. Mainly used in quality improvement projects (e.g., Six Sigma), it enables a quick identification of the relationships between suppliers, inputs, process flow and recipients of results

(Grajewski, 2014). In the context of construction, SIPOC can be used to analyse relationships between contractors, subcontractors and the developer.

The standardisation of processes is reflected in the requirements of ISO 9001:2015, which promotes a process approach as the foundation of a quality management system. The standard emphasises the importance of organisational context, risk management and data-driven decision-making (PN-EN ISO 9001:2015-10). In the construction industry, where the risk of errors and non-conformities is particularly high, implementing ISO 9001 allows processes to be structured, communication to be improved and accountability to be more transparent.

However, the effective use of BPM tools depends not only on the implementation of formal procedures, but also on the organisational culture and management commitment. As Hammer (2007) points out, without real process leadership and top management support for change, process management remains just a collection of documents rather than a value-adding practice.

2.3 Process Maturity Models and Organisational Culture

Process management develops in stages as an organisation gains experience and learns to analyse its own operations. To assess this development, process maturity models are used to classify organisations according to their level of sophistication in implementing BPM principles. Five levels of maturity are most commonly distinguished: from ad hoc activities (no formalisation), through the level of functional management, to managing processes in an integrated and strategic manner (Szelański, and Berniak-Woźny, 2021).

At higher levels of maturity, organisations have consistent process maps, a system of indicators, regular audits and improvement mechanisms. An important factor for increasing maturity is the role of management - its commitment, communication of process goals and fostering cooperation between departments. In construction companies, where a project-based structure often dominates, achieving higher levels of maturity also requires changes in the way we think about supporting and auxiliary processes (Grajewski, 2014).

2.4 Processes in Construction Industry and Integration of Design and Process Approaches

Numerous scholars emphasize that construction enterprises operate primarily in a project-based environment, where each contract or investment constitutes a temporary organization created to deliver a specific outcome (Son, 2022). This project-oriented character distinguishes the construction sector from manufacturing or services and poses additional challenges in achieving process standardization, process ownership, and knowledge transfer across projects.

The construction industry is a special environment for the implementation of process management, as the activities of construction companies combine elements of repetitive processes with the uniqueness of projects. On the one hand, contractor organisations follow similar types of processes (e.g., investment preparation, tendering, material supply, construction supervision), while on the other hand, each project is a one-off and requires an individual approach (Hoła and Polak, 2012).

The literature indicates that effective management in construction requires the integration of project and process approaches. Projects represent the realisation of operational objectives, while processes ensure repeatability, quality and standardisation. The process approach makes it possible to identify and optimise activities common to many projects, such as resource planning, procurement or quality control. In this way, process management bridges the gap between a company's strategy and operations (Nowosielski, 2018).

The specific nature of the construction industry means that the implementation of BPM faces numerous barriers, including the lack of stable organisational structures, a wide variety of subcontractors and temporary project teams. However, increasing quality requirements and market pressures are causing more and more companies to implement elements of process management - from simple documentation of procedures to full process mapping and implementation of ISO standards.

2.5 Research Gap and Direction of Empirical Analysis

A review of the literature indicates that although process management is widely described in the context of industry and services, it is still at an early stage of development in the construction industry.

Most publications focus on project management, while the integration of process and project approaches is rarely empirically analysed. The factors influencing employees' process awareness and the degree of formalisation of activities depending on the size of the organisation also remain insufficiently recognised (Smajli *et al.*, 2024).

In this context, the conducted own research is an attempt to fill the research gap by assessing the actual level of implementation of the process approach in Polish construction companies. The analysis covers aspects such as the existence of process documentation, the use of BPM tools and the influence of company size on the knowledge of process management.

3. Research Methodology

The study aimed to determine the degree of implementation of the process approach in executive construction companies and to identify the relationship between project orientation and the formalisation of internal processes. Due to the nature of the

research problem, a quantitative method in the form of a survey was adopted. The CAWI (Computer Assisted Web Interview) technique was used, which enabled data to be collected remotely, quickly and efficiently.

The research tool was in the form of an electronic questionnaire developed in Polish, distributed via e-mail and instant messaging. The selection of respondents was purposive and the primary criterion for inclusion in the study was knowledge of work organisation issues in a construction company and practical experience of project and process management.

The study involved 14 respondents representing a diverse range of contractor companies in the construction sector: from micro and small local firms to medium and large regional or national entities. This diversity made it possible to capture differences in process approach resulting from the scale of operations and the degree of formalisation of organisational structures. The diversity of the sample in terms of professional positions allowed the inclusion of multiple perspectives on the functioning of the organisation - from project and construction managers, to engineers and quality specialists, to management representatives.

The survey questionnaire was designed to allow both a quantitative and qualitative assessment of the phenomenon. It consisted of two parts: the first, a metric part, including questions about the company profile (size, specialisation, position of the respondent), and the second, a substantive part, devoted to issues related to process maturity, documentation of activities, and use of process management tools.

The selection of these items was dictated by the possibility to compare responses in the context of factors such as company size or position held. The inclusion of these items allowed for a comprehensive assessment of the state of awareness and practices related to the process approach in the surveyed construction companies.

Despite the limited sample size, the results obtained have cognitive and application value. They reflect current trends in the implementation of the process approach in Polish construction companies and indicate potential areas of development - especially in the context of standardisation of activities, dissemination of BPM tools and building process awareness among managerial and technical staff. The results of the study provide a starting point for further empirical analyses and can be used as comparative material in future studies on process maturity in the construction sector.

4. Research Results and Discussion

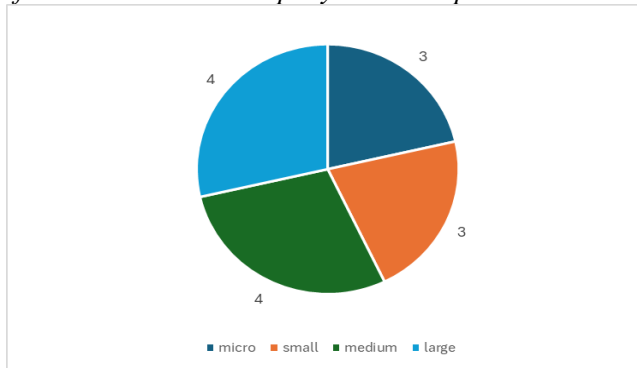
4.1 Characteristics of the Research Sample

In April 2025, a survey was conducted among employees of construction companies. The survey sample comprised 14 respondents representing construction companies of varying business profile and organisational scale. The aim of this part of the

survey was to identify key characteristics of the sample that may have influenced how the process approach was perceived and applied in professional practice.

In terms of company size, the survey included representatives of micro (up to 9 employees), small (10-49 employees), medium (50-249 employees) and large (over 250 employees) companies. Medium-sized (about 29% of the sample) and large enterprises (29%) were the most represented group, followed by micro enterprises (21%) and small enterprises (21%). The differentiation in terms of scale of operations made it possible to analyse how the size of the organisation affects the degree of formalisation of processes and the use of process management tools.

Figure 1. *Size of the construction company where respondents work.*



Source: *Author's calculations.*

Analysing the business profile of the companies, it can be seen that most of the respondents represented general construction companies, implementing residential or commercial construction projects. Some of the surveyed companies specialised in roads, bridges and industrial construction, and single cases concerned consulting entities. This sectoral diversity increases the cognitive relevance of the results, allowing the observations on the process approach to be generalised across the sector.

In terms of position occupied, the largest group were project and site managers (approximately 28% of respondents), indicating a strong representation of those directly responsible for the planning and execution of construction projects. Another group was made up of site engineers (approximately 14%), while the smallest group was made up of senior managers. This structure is conducive to obtaining data from those with hands-on experience in documenting and improving processes, while also allowing a comparison of opinions according to position in the organisational hierarchy.

Taken together, the demographic and professional characteristics of the respondents indicate that the sample was of a balanced nature - including both representatives of small companies and larger entities with extensive organisational structures. This

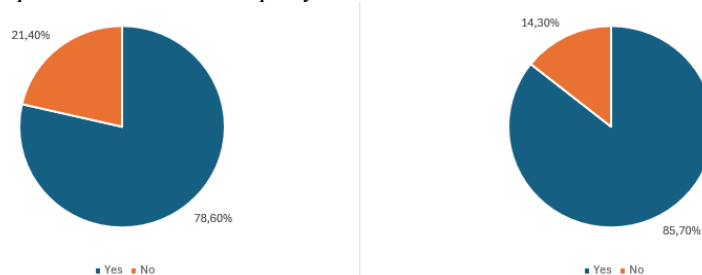
made it possible to capture the varied attitudes towards formalisation and process management, which in the following section provide a reference point for the analysis of the detailed survey results.

4.2 Analysis of Research Results

The analysis of the survey results made it possible to assess the degree of implementation of the process approach in construction companies and to identify the key factors influencing its effectiveness. The results presented below refer to questions that addressed the maturity level of the enterprise, the existence of formal procedures, the documentation of processes, and the use of BPM tools. The data are presented in percentage terms, with a qualitative interpretation resulting from the analysis of the respondents' answers.

Regarding the formalisation of processes and the documentation of activities, the vast majority of respondents confirmed that processes in their companies are formally described and documented to varying degrees. As many as 78.6% of respondents declared the existence of business process documentation, while 85.7% indicated that construction processes directly related to project implementation are also described. This result indicates a relatively high level of process awareness among industry employees.

Figure 2. Percentage summary of respondents' answers to the questions: "Are there documented business processes in the company?" and "Are there documented construction processes in the company?".



Source: Author's calculations.

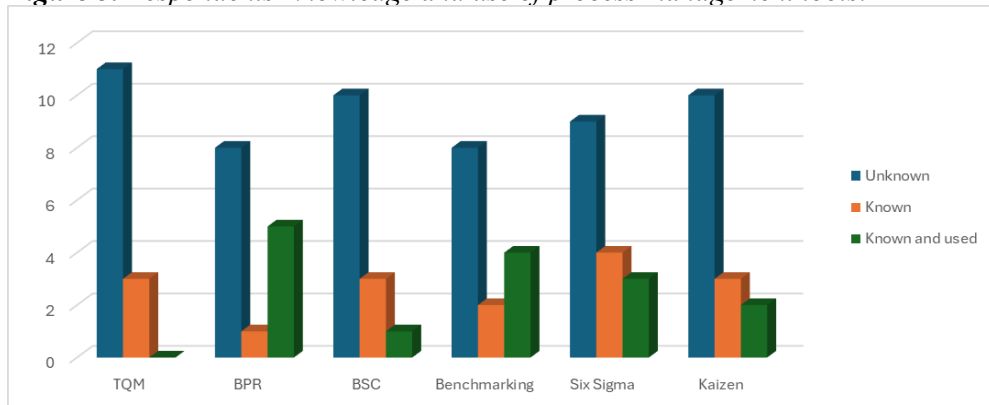
An analysis of the responses regarding the use of BPM tools showed a clear gap between the declarations and the actual use of the methods. Only half of the respondents (50%) declared that process mapping is carried out in their company. In the remaining cases, respondents indicated that the processes are known and understood, but that there is no formal graphical mapping of them.

An even lower level of implementation concerned quality management systems. Process improvement in accordance with ISO 9001:2015 was declared by only 35.7% of companies, indicating a relatively low level of process standardisation in

the construction industry. Importantly, the comments pointed out that the use of BPM tools depends largely on the size of the enterprise - medium and large companies are more likely to implement systemic approaches to process management, while micro and small entities prefer informal solutions based on employee experience.

These results support the hypothesis that the scale of the organisation influences the level of process maturity. The other tools possible for process management are also not used as shown in the chart.

Figure 3. Respondents' knowledge and use of process management tools.



Source: Author's calculations.

The analysis of the survey results confirms that awareness of the importance of the process approach is gradually growing in construction companies, but its implementation is still fragmented. Formalisation practices in terms of basic operational processes prevail. The low level of use of BPM tools and the limited involvement of employees in process improvement testify to the early stage of process maturity in this industry.

The identified results indicate the need to further develop a process-driven organisational culture, especially through management education, increased standardisation of activities and integration of processes with project and quality management systems.

5. Conclusion

The research carried out allowed some important conclusions to be drawn about the state of implementation of the process approach in construction companies. The results confirmed that, despite the growing awareness of the importance of process management, the construction industry is still at a relatively early stage of development in this area.

The most important finding is that a formal process approach is present in most companies, but it is often limited to basic operational activities. This means that implementations are partial and the process approach does not yet cover the entire functioning of the organisation.

A second important finding is the relationship between the size of the company and the level of formalisation of operations. Larger companies are more likely to have documented processes, while micro and small companies rely on the practice and experience of staff, which leads to less repeatability of activities and difficulties in optimising them. This structure of the construction sector means that introducing a full process management model requires adapting tools to the scale and resources of smaller organisations.

The analysis also showed that the use of process management tools is still limited. In many cases, employees declare knowledge of process concepts but do not apply them in practice. This indicates a competency gap, including both a lack of process analysis skills and insufficient knowledge of tools to support process improvement.

Based on the results, several research gaps can be identified that require in-depth analysis in future research projects: a comparison of process maturity between construction companies and companies from other project industries (e.g. IT, manufacturing, logistics), which would allow the specificity of the construction sector to be identified, qualitative research using in-depth interviews with project managers and company owners, which would allow barriers and motivators for the implementation of process management to be identified, an analysis of the impact of organisational culture and management style on process efficiency in construction companies.

In summary, the study showed that construction companies in Poland are in a transitional phase between an intuitive, project-based style of operation and integrated process management. The further development of this concept requires not only the adaptation of tools and standards to the specifics of the industry, but also the building of process awareness at all levels of the organisation - from management to operational staff.

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