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COMPARATIVE ANALYSIS OF MANAGING PROJECT DRIVEN ORDERS IN SMEs AND LARGE COMPANIES OF THE CONSTRUCTION INDUSTRY

Summary. The contemporary enterprises, focused on the external business environment, define their strategic objectives in the context of the market and customer needs. Their internal organizational form should go in the direction of transformations, that are taking place on a global scale, resulting from the processes of economic, political and social. This in turn requires a rejection of the existing stereotypes, division of the tasks and functions and capabilities of adaptation in response to changes in the environment, what a great example are project based organizations. Management of individual, unique production-service orders, referred to as project driven order, bears the features of the project and requires the implementation of project-based approach to the effective and efficient implementation.

This article presents the current state of knowledge, the determinants in transformation of order management in the direction of the project-based approach and results of preliminary research obtained on the basis of the effectiveness analysis of project driven order management in enterprises of the construction industry in Opolskie Voivodship.

Keywords: project driven order, effectiveness of project management, manager competencies, knowledge management, organizational project management maturity

ANALIZA PORÓWNAWCZA ZARZĄDZANIA ZLECENIAMI TYPU PROJEKT W MSP I DUŻYCH PRZEDSIĘBIORSTWACH BRANŻY BUDOWLANO-REMONTOWEJ

Streszczenie. Współczesne przedsiębiorstwa, ukierunkowane na zewnętrzne otoczenie biznesu, definiują swoje cele strategiczne w kontekście potrzeb rynku i klienta. Ich wewnętrzna forma organizacyjna powinna zmierzać w kierunku przeobrażeń podyktowanych procesami gospodarczymi, politycznymi i społecznymi, zachodzącymi w skali globalnej. To z kolei wymaga odrzucenia dotychczasowych stereotypów, rozproszenia realizacji zadań i funkcji oraz możliwości adaptacji w odpowiedzi na zmiany otoczenia, czego doskonałym przykładem są organizacje zorientowane na projekty. Zarządzanie indywidualnymi, jednorazowymi zleceniami produkcyjno-usługowymi, określanymi w praktyce przedsiębiorstw o stałych strukturach organizacyjnych mianem „zlecenia typu projekt”, nosi cechy projektu i wymaga wdrożenia podejścia projektowego w celu ich skutecznej i efektywnej realizacji.

Artykuł prezentuje obecny stan wiedzy, determinanty transformacji zarządzania zleceniami w kierunku podejścia projektowego oraz wyniki badań wstępnych uzyskanych na podstawie analizy skuteczności zarządzania zleceniami typu projekt w polskich przedsiębiorstwach branży budowlano-remontowej.

Słowa kluczowe: zlecenie typu projekt, skuteczność zarządzania projektami, kompetencje menedżerów, zarządzanie wiedzą, dojrzałość projektowa organizacji

1. Introduction

The diversity of solutions proposed today by management, as well as the rapid globalization of the economy and, in particular, the revolution in the field of technology and information technology, cause enterprise management in the twenty-first century to be directed and focused on the external business environment. This management should rely primarily on defining the objectives of the company in the context of the market and customer needs. In contrast, the economic, political and social processes occurring on a global scale force the need for the internal reorganization of a company.

The rapid development of new information and communication technologies (ICT), the move away from mass production, the strengthening of the services market, and the emergence of the information society and the service-based society have contributed to the arrival of the next technological revolution (the third, after the agrarian and industrial, according to Toffler – the so-called “third wave”). The third wave is the era of knowledge and information. Our entrance into this era is further accelerated by technological development together with globalization and the involvement of almost all countries in the world economy.

And bound to this era is the move away from mass production to production that is adapted to the needs of the individual customer. This future-man, the 'prosumer,' combines features of the producer and the consumer [4, 10, 21].

All these changes will create the need to implement new solutions in the field of business management. One such way is to put into practice the solutions of traditionally operating enterprises that are based on project management paradigms. The management of individual, one-time production and service orders bear the characteristics of a project and requires the implementation of a project approach in order to efficiently and effectively deliver the project.

This article presents the preliminary results of a study on a selected group of companies, divided into the sectors of small and medium-sized enterprises (SMEs) and large companies in the Opole region, representing the renovation-construction industry. Particular and substantial attention was given to the core essence of project management, which is the management of human resources. In accordance with the maxim "It's the people who do the projects," a continual increase in the importance of the human factor in the implementation of projects has been observed as the formation and shape of the main processes in projects depends to a large extent on the knowledge and skills of employees, and above all of their organizational behavior and attitudes. To a large extent the success of a project depends on the level of specialist-technical competences, at both the societal and individual project team member level, including the project manager, which should characterize the appropriate level of managerial competence. The effective management of projects, which is a part of the key competences of a company, can thus be a source of its competitive advantage.

2. The transformation of the concept of management oriented towards processes, using the project approach

In recent years, the transformation of the economy's orientation, from that based on production to that based on the market, has forced the entrepreneurs to find new ways to develop and maintain a market for goods and services. Increasing uncertainty resulting from rapid change has led to the need to create and implement new approaches to the management of the company [19]. In many cases a total reorganization of the business was needed, involving the rejection of existing stereotypes, dispersion of tasks and functions, and the ability to adapt quickly in response to changes in the environment, the like of which excellently exemplifies project-oriented organizations.

Project management methods and techniques can be used in the aim of an efficient fulfillment of company strategy. Project management is an appropriate tool for the implementation of programs to increase quality since it creates a holistic approach to organizational change [23].

Projects play an increasingly important and growing role in the management of all kinds of organizations: enterprises, units of state and local government, non-profit organizations, and consortia, and their presence is observed in almost every field of human activity (including work, economic activity, science, culture, sports and government), which undoubtedly raises the need for expertise and managerial skills in this area. Project management methods are a way of putting into practice a project plan, as well as the instrument to achieve basic objectives, such as time and date of completion, or the cost and the quality of the result. The success of a project is certainly a resultant of all these factors, and proper communication plays a key role in the management of the project (see. Fig. 1).

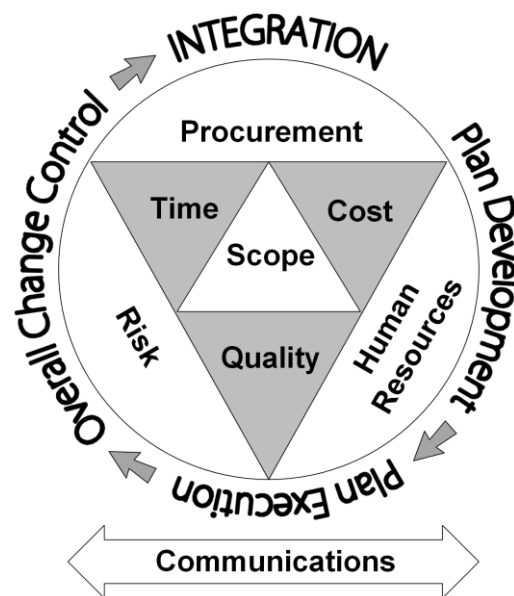


Fig. 1. Activities for obtaining project management success (iron triangle)

Rys. 1. Działania zorientowane na sukces zarządzania projektem (żelazny trójkąt)

Source: Own work based on [1, 12].

Exceeding the time frame of the project, insufficient resources, poorly constructed budgets, unclear goals and conflicts within the team are the most commonly occurring problems that both project managers and project team members must face. Recent studies by the Standish Group, published in *The Chaos Manifesto: Think Big, Act Small*, show that only 39% of projects are successful, while 43% will encounter a lot of difficulties, and 18% of

them produce losses [20]. Implementation of the project within a specified period of time and maintaining project costs within the prescribed limit, among other things, through harmonizing the interaction of stakeholders of the project is a considerable challenge for modern enterprises who are undergoing the transition of a make-to-stock to make-to-order enterprise.

The post-industrial era has gone through a total market transformation in favor of consumers. Market dominance, stemming from the era of entrepreneurship and mass production, has been completely transformed. Currently, conversion project initiatives must be accompanied by tangible results based on the principle of the logistics management concept – 5R (5W): right goods, right place, right time, right quantity, and right quality. Customers like never before require delivery as such: the right materials in the right quantity, of the right quality, and at the right place. The iron triangle design (Fig. 1) – the triple constraint management – is also subject to the impacts of the evolution in economic (re)orientation. In accordance with current standards, effective project management is to maintain the triangle constraints in balance. As such, the equilibrium of the past and that of today, have a very different shape.

The new definition of the success of a project mainly focuses on quality and customer satisfaction, slightly diminishing the importance of hard aspects, such as time, cost and scope (see. Fig. 2). The emphasis is on the development of soft factors of success: the right configuration of project team competence, high intellectual capital, precise communication, and the management of project knowledge.

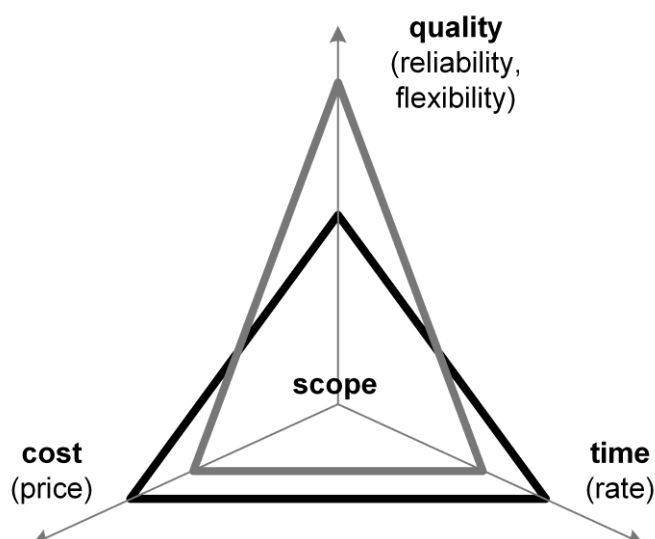


Fig. 2. Triple constraint modification of the triple constraint in relation to changes in market preferences
Rys. 2. Modyfikacja trójkąta ograniczeń w odniesieniu do zmian preferencji rynkowych
Source: Own work.

Disputes are continuously ongoing over the nature and principles of project management. They can be theoretical, such as disputes within organizations over the standardization of project management methods, as well as the more "mundane" of which design approach to use to achieve specific goals. Dispute sources are from different points of view – that of the project manager, those of members of the steering committee, also different views of investors. Those mentioned here are called “project stakeholders,” and each have their own goals. And more of an art than a science is the ability to reconcile these goals such that the project allows (at least) most of the stakeholders the chances to achieve these objectives, without any harm to the others.

However, changing the way of doing business – differentiating in the production system those tasks which are routine verses those which are unique, so-called a project – seems to be a necessity. Both the process approach and the project approach are essential from the point of view of a company to maintain its market position [7].

3. The essence of project order management in building and renovation

A project is a sequence of unique, complex and unrelated tasks of different nature, with a common goal, and is designed to be completed within a specified period of time, budget, and in accordance with accepted requirements [25]. The aim of the project is to achieve the expected results.

The functioning of modern enterprises in the globalizing world economy allows them to more frequently and significantly adjust the work of their organization to be able to deliver complex, and unique (and often innovative) ventures or projects. Such projects are a necessary part of the development of most modern businesses. More than 10 years ago, Jean Brillman argued that almost 25% of the activity of enterprises was suitable to be managed in the form of projects [2]. Today, this proportion can be successfully inverted, putting the idea that only about 25% of the activity of enterprises can not be implemented in the form of projects. Also in Poland, the number of production and service orders being treated as projects continues to grow. This applies in particular to areas such as the public works sector, the construction sector, aerospace and defense, shipbuilding, development of software, etc.

Today's dynamic and competitive market conditions are such that most of the companies in the building and renovation industry have to take on job-specific orders, whereby often encountering serious problems during completion. A common issue for these enterprises is the question of taking, or not taking on a new order. The specific nature of these types of problems require that they should be solved in real time mode. Most orders received by the company are individual and one-time production and service processes that require detailed

analysis, planning, as well as the development of appropriate management methods. Therefore, they are often treated as projects, according to the classical definition of PMI PMBOK Guide formulated in [1].

The importance of the understood forms of production processes in the work of dynamic organizations, and the need for specific management methods, accentuates the modern concept of “management by projects.” In the case of manufacturing enterprises, this means quite often to develop a completely new approach, involving the use of conventional methods of project management in organizations that are predominantly operational and have repetitive processes. Discrete Manufacturing, understood as the production of distinctive or unique products made to the customer's request and in accordance with given specification requirements is increasingly equated with the term "order-type project" [17]. This term is also called a construction contract. Fundamentally, this is a key element in the proceedings of the construction project – of the main tasks of the project, performed in close conjunction within the existing objectives and constraints. However, since in Poland there are no developed generally applicable terms and conditions of contracts for construction works, such as, for example the FIDIC International (conditions of contract for engineering and construction works) or German VOB (conditions for works), each contract is put together on the basis of separate contractual provisions and carrying different risks: commercial, financial, technical and legal. For this reason, each contract may be treated as a separate entity (not subject to any higher order contract standards) in relation to the subcontract activities that are also carried out as custom orders.

The changing ways of conducting business, the omnipresence of outsourcing (services, processes, sub-projects, as well as some of the functions of the company), and the differentiation of routine versus unique tasks in the production system, give important support that strengthens the role of projects and project-type orders in the core business activities of an enterprise.

The empirical studies involve construction companies. These companies perform project-type orders (SMEs) or construction contracts (large enterprise), and apply elements of the project approach in their undertaken activities. The inherent feature of this type of activity is the uniqueness of the project, its complexity, its time specificity, as well as some technical, organizational and economic risks. The work is carried out by a team of highly qualified members in various fields (interdisciplinary), requiring the use of special methods of preparation and performance. Competent project managers must be undoubtedly oriented on the success of the project, i.e. to achieve the agreed upon higher order objectives, within the proper time-frame, within the expected costs, and in accordance to the set quality parameters of the project.

4. The effectiveness of project-type order management in light of the empirical research

Companies with traditional organizational structures that execute project orders are particularly vulnerable to loss of competitiveness, as project management involves the use of extensive knowledge, experience, tools, methods and techniques for planning activities in order to achieve or surpass the needs and expectations of customers. This involves the need to reconcile a number of parameters, such as time, cost, client needs and expectations of the project, and the objectives of the project itself.

The question therefore arises as to whether the project teams who are designated for a certain purpose, and who are temporarily separated from solid organization structures of a company, are able to meet those earlier mentioned requirements. Do the managers of these project-type orders possess the appropriate aggregate of competencies: the knowledge in the respective field (to know what to do), skills (procedural knowledge – to know-how and can do), attitudes (be wanting and willing to use their knowledge)? Are the companies in the building and renovation sector in Poland taking advantage of (and if so, to what extent) the solutions that are suited for organizations performing projects, and whether these activities improve their competitiveness? And finally, what constraints are the businesses in this sector faced with when it comes to the development of project management knowledge in the organization, and what growth opportunities are created by the implemented solutions that are typical for the project-performing organizations being researched?

The main objective of the study is to determine the level of project management maturity in Polish enterprises that are predominantly involved in routine operational activities, within a traditional organizational structure (a static system of functional and hierarchical dependence) and who perform project-type orders, and to provide directions for improving the management of orders/contracts taking into perspective the features of project-performing organizations. In the end, it will be assumed that the analysis that has been done and the proposals that are developed will improve the level of project management maturity of the surveyed enterprises through the recommendations of innovative solutions for conducting projects, contracts and project-type-orders

The context for focusing research on the development of skills and knowledge among the studied group of companies arises out of the ongoing need to transform companies that manage project orders, from that of a cumbersome traditional organization into a dynamic project-type organization with the characteristics of intelligent organizations. Generative learning processes lead to obtaining new solutions since they allow you to search for new

approaches to problems and are therefore also important for the development of project management maturity of today's enterprises.

The study involved 25 companies from the province of Opole, belonging to the SME in the building and renovation sector, including 5 micro, 12 small and 8 medium-sized enterprises. As a counterbalance to this representation, it was decided to contrast the results obtained with the practices of a large company who performs construction contracts on behalf of an investor, these contracts being key elements in the processes used to deliver projects. Surveys were conducted among contract managers employed in one of Opole's enterprises providing multi-trade services, inter alia, industrial thermal insulation, assembly of specialty dusting installations, and light interior construction. The study included 16 contract managers involved in investment plans in the country and abroad.

Due to the nature of the research, uncontrolled observation techniques were used in addition to free-style interviews. This made it possible to more fully illustrate the course of project-type order execution, define the role of the manager in terms of critical success factors, and to reveal irregularities in the selection of project team members. In addition, it allowed for the observation of the level of social development, organizational and technological systems and methods of capitalization, and for the transmission of useful knowledge in project management of those companies surveyed.

4.1. Characteristics of project-type order management in SMEs

The introduction of the project management approach in enterprise is particularly important for companies in the small and medium-sized enterprise sector. The SME sector is a booming sector of the economy. Companies in the group of small and medium-sized enterprises are able to quickly respond to changing market conditions, and consequently they can be easily customized. Large businesses are usually not as flexible. Such conditions allow SMEs to actively work and develop in smaller market niches, where larger companies may see too little market potential. Actions taken by companies in the SME sector thus contribute to increasing the efficiency of the entire economy. However, companies of this type are sensitive to changes in the market, and are vulnerable to turbulence as a consequence of economic crises.

The study on the implementation of the project approach in enterprise, especially small and medium-sized enterprises is particularly important. Research on the state of the SME sector project management implementation has so far been little [5, 13, 15, 17, 22, 26].

Analysis of the results obtained by the authors of the article clearly shows that the majority of surveyed companies (approx. 80%) in the group of SMEs have not implemented any dedicated approach to managing project-type orders. Orders taken by enterprises in the

micro category are characterized by relatively short deadlines (up to 3 months). Project execution in the case of small and medium-sized enterprises are much longer, on average, 3-6 months, and 6-9 months respectively.

Project management is a field where you can see a very wide popularization of the so-called ‘competence models’ or ‘models of project management competencies for project managers’. Organizations responsible for the creation and development of such models are usually professional associations including the International Project Management Association (IPMA Competency Baseline), Project Management Institute (Project Manager Competency Development Framework), Engineering Construction Industry Training Board (National Occupational Standards for Project Management), Australian Institute for Project Management (Professional Competency Standards for Project Management) [24].

From the point of view of global standards, the developed models show the range of comprehensive and detailed guidelines defining the elements and levels of project competences required and desired from organizations, as well as from the employees performing specific roles and functions.

The practice of project-type order management in small and medium-sized enterprises, however, is quite different from the developed standards. Previous research conducted by the authors clearly shows that companies in the SME sector nowadays usually do not take on additional activities involving the analysis of competencies, such as that of knowledge, skills, and the attitudes and behavior of employees achieving outstanding results.

The role of the project manager in the SME sector is not particularly clear. The so-called project manager is often a foreman or company owner in the micro and small enterprises, and in the medium-sized enterprise, the project manager is a construction manager at most. Too often, the owner of the company is directly involved in the management of the project (this anomaly was observed in 13 of the surveyed enterprises). The owner of the company or the president is very close to operational issues, personally having an insight into each task in the project-type order, which, due to the scale of the company is feasible. The owner as the main decision-maker has a strong need for manual control in emergency situations, thus serving initially in the role as an attentive observer, yet quickly turns into a project manager, moving away from his previous functions as a manager. The owner of the company involved in the management of projects tends to have too much attention on their own interests – apart from that of external customers, who pay for the order. It is mainly customer needs that should be met during the project.

The specificity of small and medium-sized enterprises undoubtedly leads to the fact that many of the phenomena occurring in the projects is not only typical for the project, but also for the whole company. And so, in most of the companies all of the project-type orders are

executed with the same production activities (technology). As well, any negative situations can get repeated on other construction projects.

The project team is constant, and additionally in many small and medium-sized companies exactly the same people do similar tasks. Usually, there is no question as to the choice of the project team, not to mention the core competencies of its members. And few of them use the tools and methodologies of project management. At the same time, because we are dealing with a fixed group of people, certain formal and informal means of communication remain unchanged.

A lack of appropriate competencies (knowledge, skills and attitudes), a lack of project team members, including the managers of projects performed by SMEs, has significant consequences on the reaching (or not) of the time goals of the project-type order, on staying within budgeted costs, and on maintaining the required quality. The project management maturity level of individual companies is very different, and the same difference is observed in the level of project awareness of the individual members of the construction and repair teams (the project teams), yet this variation is clearly at a low level.

The conversion of project concepts or plans into tangible results – creating value for the organizations of the surveyed building and renovation companies in the SME sector – takes place in a haphazard manner, essentially deviating from initially accepted order baselines, without the project management methodologies that have been implemented, and mostly resembles rather ad hoc activities, rather than a systematic set of methods constituting a coherent conceptual approach to project management.

Not meeting contractual deadlines in the execution of orders occurs in each of the companies in this study. The consequence of going over the required time schedule in medium-sized enterprises are penalties imposed by the contractors. Micro and small enterprises usually negotiate with contractors for an extension of deadlines, however reducing credibility in the eyes of customers, and perhaps the loss of another order coming from the client. On the other hand, with regard to the management of costs, the research results indicate a main weakness in the practice of the project approach among the surveyed enterprises. Most of the surveyed companies do not perform sufficient calculations for the project, and measurable effects result, such as going over budget.

The companies mentioned that in estimating the time and cost of individual tasks for a project, they do not benefit from the knowledge and experience of workers who have worked on earlier project-type orders (almost 80% of them). Also, many do not use any formal methods or tools for estimating time and costing of the project (67% of micro and small enterprises).

4.2. Characteristics of contract management in large enterprise

The study included 16 heads of contract (treated as project managers), responsible for planning, organizing and controlling the execution of contracts in one of the companies providing construction services in the Opole region. Most of the selected employees are employees of the company as a result of an earlier merger and restructure. This information is important for the determination of the surveyed person's actual knowledge of project management. Their level of knowledge, experience and skills are what the success of the projects mainly depend on. In large enterprises the project manager is undoubtedly the central and key figure with a clear-cut role and tasks – and which was the case for the company investigated.

It is worth mentioning that the vast majority of contracts executed in the company are external – more than 93% of the projects, including an international dimension accounting for more than 68% of the projects. Slightly more than 31% are projects on a national scale. Project managers are usually dealing with contracts whose execution time is from 1-6 months, and the average budget fluctuates within a few million złotych (Polish currency – PLN).

More than half of the contracts end on the scheduled date and do not exceed the planned budget. It can therefore be concluded that the project managers properly fulfill their responsibilities in the planning and execution of the contract.

The research shows that the company has a proper recruitment system since the people in the position of project manager have high qualifications, usually with higher education at the bachelor's degree or specialized high school level – this applies to more than 62% of workers in this group.

However, despite demonstrating a high level of knowledge in their fields, which is the subject area relating to the project, the managers displayed significant deficiencies in knowledge in key areas of project management. More than 87% of them do not know and do not apply the basic methods and tools for project planning, such as CPM, PERT or Gantt schedules. The causes of this may be several. Firstly, contract managers plan and execute tasks in accordance with the procedures set out in their company's Quality Management System, which do not include these above mentioned project planning concepts. Another important reason may be the fact that the managers surveyed are mostly workers employed by the company as a result of the corporate merger and restructure. These project managers have knowledge that is more focused on project management concepts in practice rather than on actual names which these concepts may go by. This may be due to the fact that their parent company has some different training system in practice [14].

More than 81% of the respondents use MS Excel in their work related to planning, organizing and executing the projects, and in a few cases the use of MS Project. This means that these employees don't have a much of a desire to use information technology tools to support the process of project management. However, they are largely tied to their own self-developed traditional methods.

The vast majority of contract managers in this large enterprise affirm the collection and archiving of knowledge related to the execution of projects (such a response was given by about 94% of respondents). In most cases, there are simple archiving steps consisting of preparing notes in electronic form and storing them in databases that are created for personal use. Those involved in the study confirmed the systematic and frequent use of the so-preserved practical knowledge. Most often this information is related to the initial phase of the project. It is worth emphasizing that despite the declaration of the pooling of knowledge regarding projects, it is difficult to see any activity in the processes of its processing and sharing.

Regarding the desired qualities and skills of the project manager, the answers given by most of those surveyed coincide with what is described in the literature concerning what should distinctively stand out in a project manager: (1) the ability to work with people, (2) the effective conduct of global negotiations with those directly linked to the project, and (3) the ability to build effective team functioning [16].

In the aim of providing a deeper analysis of this study, additional interviews were conducted with top-level managers of the company. The board expressed concern about the preliminary results, particularly in terms of the knowledge of the contract managers on methods and tools of project management. In the future it is planned to re-examine those managers who are responsible for the execution of strategic projects, and also examine those participants who had, or will have taken part in numerous training courses in this area. This will allow to effectively verify the hypotheses regarding the causes of the unsatisfactory state of knowledge in key areas of project management.

5. Knowledge as an attribute of success in project-type orders

Knowledge of the workings of an organization, and also that of project-type order execution, has a meaningful role in building a sustainable competitive advantage for companies [18]. This is because it integrates processes related to creativity, innovation, customer relations, the use of best practices, learning and skill development. It also involves aspects of building a knowledge-based culture. The theme of project management takes on

a new character as it moves into the field of dynamic, time-limited, temporary and team-conducted undertakings.

Effective project management requires the manager's knowledge and skills far beyond the so-called 'domain' knowledge, which is the main field in which the project is concerned. Among the managerial competences mentioned [1, 3, 6], there are ten main areas of expertise that the project manager should know well in order to be prepared for their role (see. Fig. 3).

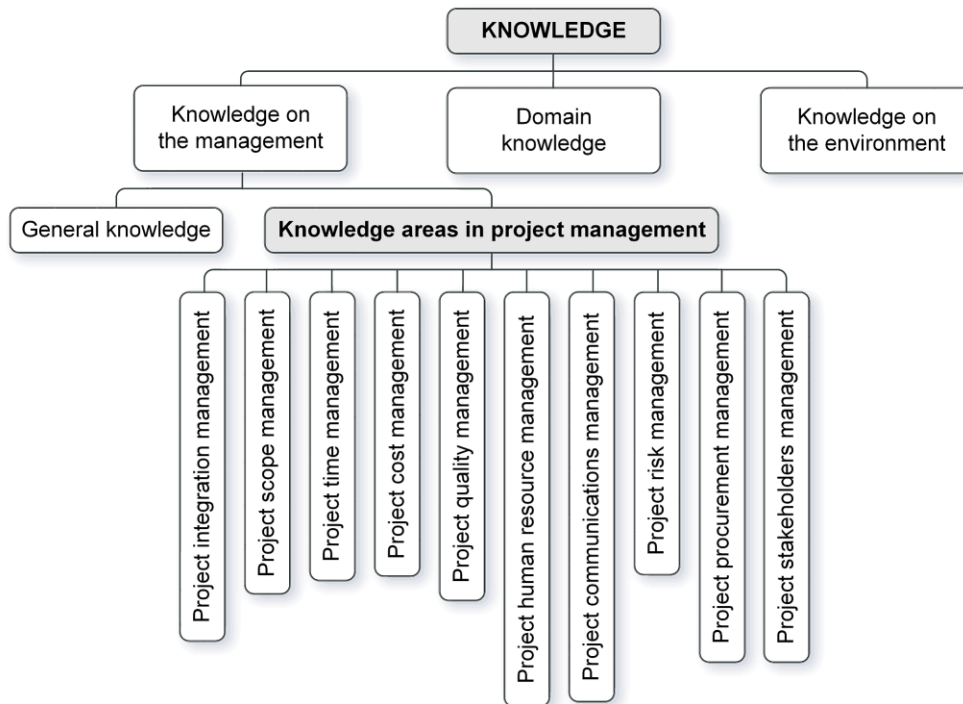


Fig. 3. Kinds of knowledge required for projects

Rys. 3. Rodzaje wiedzy potrzebnej projektom

Source: Own work based on [1].

Aiming towards the dedicated standards of project-type organizations, it should be noted that companies in the field of building and renovation provide great opportunities for learning from projects. However, in reality their actions do not often support this assumptions. As a rule, projects end with a depletion of learning opportunities and learning available in one project is not passed on to others, and are forgotten. For businesses, this means a high cost of lost opportunities in improving techniques and methods of project management. Modern companies can and should learn from projects through the use of this wealth of knowledge – opportunities are created for employees who learn from the carried out activities and their results [9]. A condition for the use and application of this knowledge is its collection and making it available to all employees.

The flow of knowledge between the different knowledge-management levels (knowledge of projects) in an organization is significant in illustrating the dependencies along the following line: creation-collection-provision-use of intellectual capital. Between the global level (world and inter-organizational) and local level (organization, project, and individual), the exchange of knowledge is based on: (1) providing compendia, standards, publications, and (2) the transfer of experience and knowledge elements from business to science.

At the local level of management of project knowledge is the knowledge of the project team members, and their competencies allow for the generation of innovative solutions and knowledge creation. At the project level, knowledge can be acquired from an organization that creates the right conditions for knowledge management (especially in terms of the generation, capitalization and sharing), as well from the individual level – from the project team.

The observed correlation between the level of project-knowledge in an enterprise and the effectiveness of project management has given reason to undertaking a comparative analysis of the examined group of companies (between SMEs and large enterprise) in context of specific areas of knowledge, as indicated by the surveyed companies as particularly important areas of knowledge for the building and renovation industry. It is not difficult to see that a big company has more knowledge of projects at its disposal, thus clearly having influence on the wider range of competences in relation to project management. It is worth mentioning that the investigated company focuses on knowledge of the environment and the jurisdiction in which the project is performed. Excellent knowledge of the law resulting from the construction and attention to proper policy on Corporate Social Responsibility (CSR), builds a proper image of the organization.

Of greater importance to a large company is knowledge of the competencies and attitudes of the project team. Attention to the human factor significantly increases the chances of success of the project. Traditional recruitment thus turns into the raising of intellectual capital. Company size is not most important, but its culture is – a culture in which employees are the most valuable assets of the company, and the learning process turns into education for the growth of entrepreneurship.

Knowledge of the attitudes and objectives of the project stakeholders is more desirable in the large company, rather than in the group of SMEs. This is due to the specific nature of construction contract agreements that are based on separate contractual provisions which pertain to risks related to commercial, financial, technical and legal aspects, including those related to stakeholders.

An interesting result was obtained in the area of knowledge of technologies, opportunities and the difficulties associated with them. This is the only area where the SME group claim to

have a higher level of familiarity. In a sense this is justified as the innovative technologies used in a large company, and its complexity (which undoubtedly dominate over that of the rest of the surveyed building and renovation companies) give rise to the belief that a large company can't be familiar with all the technical aspects involved in the production of goods and services which make intensive use of technology. Generally, the SMEs confine the solutions proposed to their customers to technologies that are known, proven, and where its application during project execution does not cause excessive difficulty.

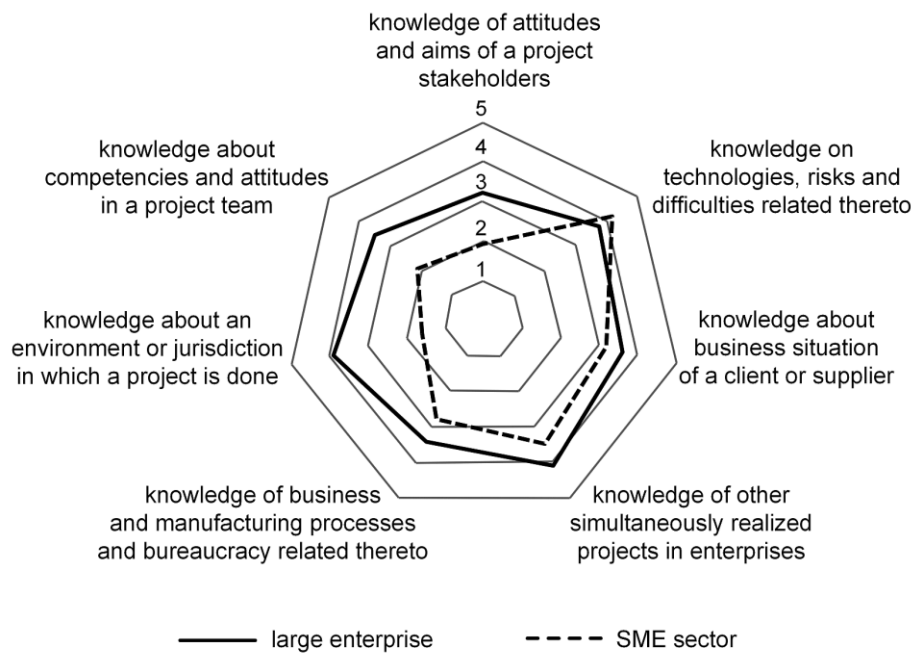


Fig. 4. The level of knowledge in projects on the basis of knowledge areas
Rys. 4. Poziom wiedzy w projektach na podstawie badanych obszarów wiedzy
Source: Own work.

6. Summary

The project management maturity level varies from one company to the next, and so does the level of awareness vary between the observed project team members (construction and repair brigades) – yet variation is clearly at a relatively low level for the entire group of SMEs, and slightly higher for the group of construction contract managers working in the large company.

The main conclusion from the above observations and analyses is that small and medium-sized businesses especially need competent project managers who will be able to professionally manage and direct their execution: to introduce organizational changes and

introduce new technologies, implement strategic development projects, or deliver the constructed facilities – on time, within budget and with the proper quality requirements. The large company possesses these, despite the fact that certain deficiencies were discovered during the survey of their knowledge on the methods and tools of project management.

Summing up the results of the empirical studies of the SME-sector entities, it should be emphasized that there is undoubtedly a low level of implementation of solutions that are typical for organizations who perform project-type orders. This is consistent with the hypothesis that the key problem in the execution of project-type orders is the wrong management of knowledge (project management knowledge) as demonstrated by the low efficiency of its use, and most of all the poor ability of the organizations to accumulate knowledge of projects, thus experience the loss of so-called ‘organizational memory’. These phenomena lead to less efficient projects, low-quality results, unsatisfactory commissioning projects and inefficient management of the funds allocated for their implementation. The low degree of organizational learning and the low usage of project experience leads to a reluctance to implement innovative projects, which results in lost opportunities – not only at the individual business level, but also at the social and macroeconomic levels.

During the individual interviews with senior management and stakeholders of construction contracts, and also from those in the building and renovation enterprises, the following recommendations were pointed out in order to improve the situation: (1) documenting knowledge arising from projects – preferably in real-time, (2) creation of work conditions and collaboration to support the exchange of knowledge, (3) maintaining knowledge maps of the organization, and (4) to search for knowledge that already exists in the organization, before beginning to ‘reinvent the wheel’. These recommendations have a direct impact on the management of project-type orders, which in essence is related to the processing of knowledge. Project team members – with specialist knowledge – in the project are working together on the delivery of new products and services on time, on budget and of a certain quality. From this point of view, an important task for the project manager will be to manage the knowledge of his team and stakeholders – and to integrate this knowledge as well as possible so as to facilitate the execution of the project successfully. Members of the project team are also to manage their own knowledge – individually and collectively – using their possessed knowledge and assimilating the new, and sharing it with others and therefore form new knowledge in the organization. Consequently, the use of knowledge management methods in projects to guarantee successful outcomes finds solid justification.

A knowledge-based economy poses new challenges for businesses in the efficient and effective development of organizational learning processes. The study clearly indicates that

the ability of business entities that have rigid organizational structures to adjust to current challenges of the economy is definitely at a low level

Thanks to the systematic accumulation of knowledge and experience in connection to the execution of project-type orders, the construction and repair industry has much to gain. And thanks to the implementation of knowledge-management processes, the so-called best project management practices can be identified and in turn determine the most effective mechanisms for solving problems that are specific to the group of companies. In addition, learning from projects allows for continuous development and improvement of processes and products resulting from the project execution, and is an opportunity to continue to improve methods and techniques of project management. In the long term, knowledge management enables organizations to develop project related competencies that allow it to gain or maintain a competitive advantage, thereby improving the project maturity of the organization.

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