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APPROBATION OF PROJECT MANAGEMENT METHODOLOGY IN DEGRADED AREAS REVITALIZATION PROJECTS

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Abstract
Degraded areas are an important element of modern urban space. This is especially evident in industrial post-socialist countries, including Latvia, where intensive industrialization took place during the 20th century. Regeneration of degraded areas is an opportunity not only to prevent pollution caused by the effects of past industrial activity, but also to improve the urban environment, develop business and take care of the overall image of the urban landscape. One of the tools that local governments in Latvia and also in the European Union (EU) can use to return degraded areas to economic circulation is to implement the opportunities offered by European Regional Development Fund (ERDF) projects by absorbing funding from the Operational Program "Growth and Employment" 5.6.2 within the framework of the specific support objective "Revitalization of territories by regenerating degraded territories in accordance with integrated development programs of local governments" (SSO 5.6.2). In order for the project implementation to be successful and to be able to achieve the project goal, the local government, as a project implementer, needs to choose a project management methodology appropriate for a specific project.
Key words: degraded areas, project management methodology, revitalization projects.

Introduction

The existence of degraded areas in Latvia is a relatively new type of land use problem that began to develop in the 20th century and is still ongoing. The main reason for the existence of degraded areas is the change of the political system in Latvia, when after the collapse of the Soviet system abandoned, non-functioning factories, production facilities appeared, causing the emergence of degraded areas (Berzina *et al*., 2019).

In Latvia, the definition of degraded area is set out in the Land Management Law, which states that "degraded area – an area with ruined or damaged topsoil or abandoned building, mining, economic or military activity area". The law stipulates that each local government develops its own assessment of the possibilities of using its territory, but does not determine a common approach in the criteria and definition of degraded area. In the international literature, the term "*brownfields*" is mentioned, which describes a certain problem of urban development – a post-industrial area that arises as a result of various anthropogenic activities and is located in urban centres (Yount, 2003*).*

Land is a limited resource. In order to ensure the sustainable development of the territory of each municipality, the focus of activity should be on more efficient use of land as a resource. Regeneration of degraded areas is an opportunity not only to prevent pollution caused by the effects of past industrial activity, but also to improve the urban environment, develop business and take care of the overall image of the urban landscape. Latvian local governments can apply for support from EU funds, which is introduced in SSO 5.6.2 and the aim of this program is the revitalization of territories by regenerating degraded areas in accordance with municipal development programs, ensuring environmentally friendly and environmentally sustainable territorial growth and job creation (Cabinet of Ministers Regulations, 2015). In order for the local government to be able to implement projects professionally, in accordance with the specifics and requirements of the project, it is necessary to choose an appropriate project management methodology.

The aim of the study is to analyze the Waterfall and Agile project management methodology and to evaluate the possibilities of their adaptation in the implementation of degraded areas revitalization projects. To achieve this, the following specific tasks are set:

1) to analyze the theoretical aspects of Waterfall methodology;
2) to analyze the theoretical aspects of Agile methodology;
3) to analyze SSO 5.6.2 project program requirements;
4) to adapt methodologies for the implementation of degraded areas revitalization projects.

In this study, the term "approbation" means "recognition in favour" as defined in the glossary of terms and foreign words. The scientific article provides a basis for further research on the application of different project management approaches and methodologies, which could be based on the idea of creating a unique methodology for a degraded area revitalization project.

Materials and Methods

The following methods were used in the study: 1. Document analysis. Taking into account the research object – revitalization projects of degraded areas, as well as the aim of the research, this method can be considered as one of the most suitable methods for

obtaining and analyzing information. The regulatory enactments regulating SSO 5.6.2 were analyzed – November 10, 2015 Regulations of the Cabinet of Ministers No. 645 "Operational Program" Growth and Employment "5.6.2 Specific Support Objective" Territorial Revitalization by Regenerating Degraded Areas in Accordance with Local Government Integrated Development Programs and Guidelines No. 2.1"Guidelines for Determining Eligible and Ineligible Costs in the 2014-2020 Planning Period" developed by the Ministry of Finance. Document analysis was used with the aim to find out what requirements local governments must comply with when implementing projects within the framework of the SSO 5.6.2 program. The guidelines have been developed with the aim to explain the types of eligible and ineligible costs and the basic principles that determine which types of costs can be included in the projects of the EU Structural Funds for 2014–2020 planning period. The information obtained in the document analysis provides an opportunity to evaluate the choice of the appropriate project management methodology. 2. Analysis of theoretical literature sources. This method has been chosen to perform an analysis of the project management methodologies available in project management theory using the available literature sources. In project management theory, two basic project management methodologies are distinguished – Waterfall and Agile (Agile methodology also includes other methodologies – Scrum, Kanban, XP, etc.). Using the comparative approach in the analysis of theoretical literature sources, the comparison of both methodologies, analysis, compilation of the obtained data were performed. Based on the obtained data, an approbation model of both methodologies was developed in the management of degraded areas revitalization projects in municipalities. The analysis of theoretical literature sources is based on scientific publications, conference proceedings, project management books.

Results and Discussion

The choice of the best project management methodology is based on the characteristics, requirements, external environment in which the project will be implemented and organizational aspects. Due to the differences between the projects and the fact that the projects are implemented in conditions of uncertainty, it is necessary to choose the appropriate methodology for the management of each project.

Project management methodology is defined as a set of methods, techniques, procedures, rules, used to achieve project objectives (Spundak, 2014). The methodology is based on specific project requirements and ensuring its successful management. The definition of project management methodology includes aspects of standardization of organizations and project management activities to achieve the project goal (Zdanyte & Neverausks, 2011). As no two projects are the same, even if they are implemented within the same program and the same organization, the choice of the appropriate methodology can be problematic, as there is no one general project management methodology that is suitable for all projects in the same field of activity.

Latvia's municipal strategies for revitalizing degraded areas with the support of EU funds are

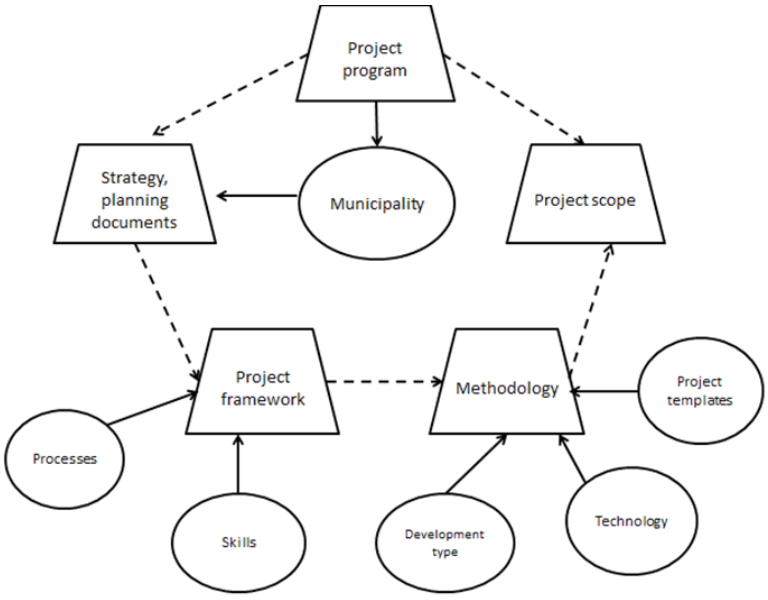

Figure 1. A conceptual model to justify the choice of project management methodology in municipalities.
Source: author's created by Jason Charvat, 2003.

mostly related to business development, in which projects are adjusted for innovative sectors and new economic development trends. The success of the project and the project results according to the needs of the entrepreneur depend on the quality of the project management process ensured by the project management methodology. In order to clearly demonstrate the need for project management methodology and substantiate its role in the municipal development process, the author has created a scheme that depicts the elements of this process and the link between them (Figure 1).

The diagram shows a conceptual model that substantiates the role of project management methodology in the structure of municipal project-oriented activities. At the heart of the project management methodology for the municipality, as a project implementer, is an effective strategy influenced by project programs and development planning documents. In accordance with the municipal planning documents, the project framework and methodology are determined, which consists of the selected technologies, developed samples and templates for documents.

Projects are unique, so it is necessary to choose the best model for their management, based on the most important factors determined by the project requirements and the project selection conditions set by EU funds.

The trend for organizations to change their way of thinking, philosophy and culture is growing, and this is also having an impact on project management, introducing new, innovative solutions that help achieve the desired result and fostering the implementation of organizational strategies based on successful project management. So the question is – which of the project management methodologies should be used and what criteria make you choose one of the methodologies? This issue is especially relevant for degraded area revitalization projects, as the result of such projects must meet not only the requirements and needs of the municipality as a project implementer, but above all, the end user of the project – an entrepreneur who will develop the potential of this area with his or her business idea.

By their scope, degraded areas projects are infrastructure development projects. As mentioned in the literature, for example, Mike McCormick's "Waterfall vs. Agile Methodology", the Waterfall methodology is more suitable for infrastructure projects, which states that it is a linear project management approach, where the requirements of stakeholders and customers are summed up at the beginning of the project, and then a sequential project plan is created to adapt to these requirements. This methodology is called Waterfall, because in this model the tasks are performed sequentially – the amount of resources and the time allotted for each task are carefully planned. Project management in this case follows the project life cycle model. As a result of this close adherence to the engagement plan, there is often a risk that significant factors have not been included in the plan, and this may result in errors for which resources are not allocated. After each phase, documentation is prepared to ensure the quality of the project. Although the Waterfall methodology highlights its stability as one of its advantages, stating that it can be applied equally to all projects, it is increasingly cited as one of the main disadvantages of such an approach. Nowadays, more and more authors emphasize the fact that one approach does not suit everyone (Wysocki, 2007). Projects, like the business environment, are becoming increasingly complex and dynamic, and digitalisation processes are evolving rapidly, requiring not only changes in management styles but also adaptation to the rapidly changing external environment of projects. Waterfall project management methodology is based mainly on hierarchy and linear task relationships, which prevents the possibility to change the tasks planned in the project (Spundak, 2011).

To address the shortcomings of the Waterfall project management methodology in terms of a flexible and dynamic approach to project implementation, the Agile project management methodology was developed. Agile methodology is based on its 4 basic principles, which emphasize – "individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, responding to change over following a plan" (Apke, 2015). It should be noted that these principles are not categorized - unequivocally emphasizing only those statements that determine the essence of Agile principles – individuals and interactions, working software, customer collaboration, responding to change. Agile methodology does not deny and even partially accepts processes and tools, comprehensive documentation, contract negotiation, following a plan. It should be noted that these principles are not categorized: by emphasizing the statements on the left, no less important role is delegated to the statements on the right. The above shows that Agile emphasizes a customer-oriented approach – as little contractual commitment as possible, but more cooperation with the customer, leaving following a plan and project requirements in the background. The Agile methodology, like the Waterfall methodology, offers the phasing of the project process (Wysocki, 2012), which improves the transparency of its processes. Since this methodology was originally developed for the creation and implementation of

Table 1

Difference between Waterfall methodology and Agile methodology basic criteria

No	Criteria	Waterfall methodology	Agile methodology
1.	Requirements	Clearly defined, do not allow changes	Not fixed, adjust to change
2.	Users of the project result	Not involved	Close cooperation
3.	Documentation	Extensive volume, processes are documented	Primary necessity documents
4.	Planning	Planning is the most important stage of the project	Does not attach much importance

Source: created by the authors based on Spundak, 2012.

information technology projects, over time it has begun to be used in both engineering and construction projects. However, it should be noted that using an Agile methodology based on the Agile philosophy and way of thinking can only yield positive results for those organizations whose culture is in line with the Agile philosophy (Apke, 2015). In this case, there may be more discussion not about the use of the Agile methodology itself in degraded areas revitalization projects, but about the readiness of the municipality as an organization to change its internal culture to adapt it to the possible use of the Agile methodology.

Summarizing the findings of the analysis of the theoretical literature, the data are presented in the table, which shows the main differences in the use of both methodologies based on criteria that are relevant for degraded areas revitalization projects – requirements, project result users, documentation, project planning.

As the information summarized in the table shows, the two methodologies can be considered different in all the criteria, which are set as the most significant in degraded areas revitalization projects. This shows that unambiguously choosing the appropriate methodology in project management is a complex process with inherent challenges. Especially in EU funds projects, which have strict requirements from the managing authority of EU funds and co-operation institution.

Both the Waterfall project management methodology and Agile have their advantages and disadvantages, and it is difficult to assess which of the methodologies is better (Andersen, 2006). The Waterfall methodology is more suitable for projects with well-defined initial requirements and a clear project goal, but with a low level of adaptation to change (Wysocki, 2007), while the Agile methodology is based on fast and flexible adaptation to changes in circumstances of great uncertainty.

Before choosing one of the methodologies and adapting it to the degraded areas revitalization projects implemented by local governments, it is first necessary to get acquainted with and evaluate the project program guidelines and regulations. As mentioned above, one of the support instruments in the revitalization of degraded areas is the use of EU funding project financing opportunities, which is regulated in SSO 5.6.2 within the framework of the program and the implementation of which in Latvia based November 10, 2015 Cabinet Regulation No. 645 "Operational Program" "Growth and Employment" 5.6.2. Regulations for the Implementation of the Specific Support Objective "Revitalization of Territories by Regenerating Degraded Areas in Accordance with Municipal Integrated Development Programs", aimed at the revitalization of territories by regenerating degraded areas in accordance with municipal development programs, ensuring environmentally friendly and environmentally sustainable territorial growth and job creation. The regulations prescribe the indicators to be achieved as a result of the project, the activities to be supported and the available funding, as well as the conditions regarding the cooperation partner - entrepreneur, who will be the user of the project result as a result of the project implementation under this project, the entrepreneur has to make a commitment to use and maintain the project result and must provide proof that he undertakes to create new jobs and invest in his or her intangible assets and fixed assets as a result of the project.

Within the framework of this project program, investments in the renewal of territories are supported, which will be adapted for the location of new companies or the expansion of existing companies in order to promote employment and economic activity (Cabinet of Ministers Regulations, 2015). This shows that the main area of project activity is the development of infrastructure with a high level of complexity.

In complex construction projects in the field of infrastructure, time, resource and cost planning is important in project management. Infrastructure projects have largely taken a requirements- and control-oriented approach, but recent research suggests that complex projects require more flexible practices to manage unavoidable project changes. However, the impact of flexibility-oriented project management on the results of complex projects has not been rigorously empirically tested in the past (Eriksson, 2017).

Taking into account the specifics of degraded areas revitalization projects and using the data in Table

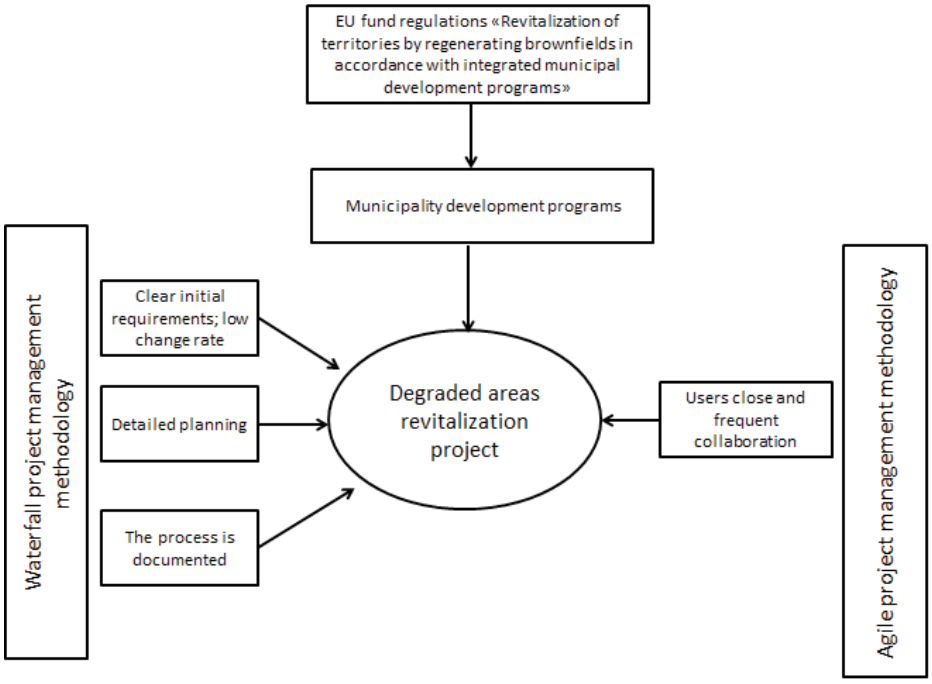

Figure 2. Approbation model of Waterfall and Agile methodologies in degraded areas revitalization project management in municipalities (created by the authors).

1, it is possible to evaluate the possibility of using the necessary project management methodology. The authors emphasize the basic criteria in the implementation aspects of this project program, which is careful and detailed planning to ensure achievable indicators, funding and define project activities, entrepreneur involvement in project implementation and definition and control of project requirements. When setting requirements for a project, it is necessary to document them, which is also determined by the EU funds co-operation institution and the guidelines for the implementation of EU funds projects. No less important role in degraded areas projects, especially in the context of SSO 5.6.2 framework, is played by the user of the project result - the entrepreneur, who obliges the municipality to create a project solution that satisfies the requirements and needs of the entrepreneur. This suggests that the entrepreneur should be involved in the implementation of the project and that his requirements should be decisive. The organizational form of municipal work in ensuring project management stipulates that the project management team is formed from the municipal administrative resources and municipal project employees are involved in the project management team. Project implementation working groups include staff who directly participates in the implementation of the project – the contractor, the author's supervisor, the cooperation partner and other stakeholders. In this case, the user of the project result, i.e. the entrepreneur, may be involved in the implementation of the project, but his participation will be more engaging but not decisive and decision-making. Such a procedure is determined by each local government, in accordance with the specifics of the project, and it does not contradict the existing regulatory enactments in Latvia and SSO 5.6.2 regulatory documents.

Evaluating all aspects that are able to ensure successful project management in degraded areas revitalization projects, the authors have developed a methodological framework for degraded areas projects, which is shown in Figure 2. Based on the data of Table 1 and the requirements of the project program, it is possible to create an approbation model of the degraded areas revitalization project methodology.

As shown in Figure 2, in the management of degraded areas revitalization projects, it is important to know and manage the requirements set by the EU funds project program, project quality and scope regulatory requirements, project regulatory requirements, and develop detailed plans. All of the above activities are relevant to the Waterfall methodology. As an important factor in the implementation of these projects is the involvement of the user of the project result, i.e. the entrepreneur, this approach can be implemented using the Agile methodology in the management of degraded areas revitalization projects. Thus, it can be argued that one methodological approach to the implementation of degraded areas revitalization projects may not be enough - more effective results can be achieved using different elements of both

methodologies. It is important to find the main factors from both methodologies and test them according to the specifics of the project.

Conclusions

1. In view of the above, it can be argued that the methodologies analysed are different in nature and offer a different approach to project management. In accordance with the tasks set, it can be concluded that:
2. Waterfall defines strict requirements, documented processes and is suitable for projects that do not envisage a flexible approach and adaptation to change. The specifics of infrastructure projects are in line with the guidelines of the Waterfall methodology. However, it should be kept in mind that projects are implemented in a rapidly changing environment, which must be able to adapt to the requirements of the external environment, and this makes it difficult to choose such a methodology in all the basic criteria.
3. The Agile methodology offers a flexible approach during project implementation, cooperation with the client, who is the main stakeholder of the project, as little documentation and contracts as possible. The methodology envisages effective adaptation to new conditions and changes during the project implementation, which is characteristic of the specifics of modern project management in infrastructure projects as well.
4. Strict and certain requirements for the management of degraded areas revitalization projects are determined by the regulatory enactments regulating SSO 5.6.2. The requirements mainly relate to project activities, funding, result indicators, which indicate the need for detailed planning and extensive documentation in the project - contracts, technical documentation, financial plan, time schedule, detailed cost reports. All project documentation is checked in the EU funds co-operation institution, and its scope and type is determined by the guidelines developed by the EU funds responsible institution.
5. Each of the methodologies is suitable for projects of a different nature, scope and size, but this does not mean that a successful project result can be achieved using only one of the methodologies. In order to choose an appropriate project management methodology, it is first necessary to determine the specific conditions of each project and the factors on which the project implementation is based. Therefore, it is recommended to choose the methodology based on the criteria determined by the content of the project and the planned objectives.
6. Municipalities form project management teams based on their human resources, which are managed by a project manager appointed by order of the head of the municipality. The entrepreneur who is interested in the outcome of the project may be included in the project implementation working group. It should be emphasized that the entrepreneur's role in the management of this project is important, and the project result must be in line with the needs of the entrepreneur.

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