Postmodern Openings
ISSN: 2068-0236 | e-ISSN: 2069-9387
Covered in: Web of Sciences (WOS); EBSCO; ERIH+; Google Scholar; Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Ulrich ProQuest; Cabell, Journalseek; Scipio; Philpapers; SHERPA/RoMEO repositories; KVK; WorldCat; CrossRef; CrossCheck

2021, Volume 12, Issue 1, pages: 115-127 | https://doi.org/10.18662/po/12.1/249

Particularities of the Closing Processes of Project in the Context of Sustainability Requirements

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Abstract: The closing processes of the projects influenced their performance from the perspective of how the transfer of competences and resources was managed between the different categories involved. The focus of the efforts of the project teams on the processes of beginning and developing the projects generates a weaker involvement in the closing of the projects, and this aspect is frequently to the disadvantage of the beneficiaries. The present research paper is a systematic review and aims to highlight the need for an integrated approach to the processes of project completion, in the context of the sustainability requirements imposed by the owners. The obtained results can give a complete image to the future project managers who can thus know the particularities of the closing processes, even from the testing and acceptance phase.

Keywords: *sustainability; closing process; life cycle management.*

How to cite: Caibula, M.N., Militaru, C., Tamas, R., Dumitrache, C., & Dumitrache, R. (2021). Particularities of the Closing Processes of Project in the Context of Sustainability Requirements. *Postmodern Openings, 12*(1), 115-127. doi: 10.18662/po/12.1/249

1. Introduction

Sustainable development and implicitly the implementation of sustainable projects represent one of the characteristics of the postmodern society, which designates the efficient use of resources (human, material, informational, etc.), in order to satisfy the needs of the society and to protect the environment. The sustainability of the projects has become a strict requirement of the beneficiaries in the context of increasing financial pressure and performance objectives. Regardless of the field in which all projects are implemented, they have a similar life cycle, going through several stages in which a series of processes take place. The division of projects into characteristic sub-stages reduces the risk of errors and increases control over the way activities are carried out, in order to accomplish the objectives initially set, allowing the right decisions to be taken after the completion of specific steps.

Each characteristic stage of a project aims to achieve clear, final or intermediate results: building a prototype, compiling a database, training people in the target group, purchasing certain equipment, etc. Any project implemented within an organization has as its main objective the manufacture of a new product or the improvement of the existing production process, in order to meet the needs of the community in which it is implemented. The development of any project involves a risk note that directly influences the previously expected results. The risks condition the realization of the project, and most of the time it takes extra time and money. All the results obtained at the end of each stage are compared with those initially expected to be achieved, in order to analyze the progress of the projects, so that any problems that may arise can be solved quickly and with minimal resource consumption. In this context, the concept of sustainability, of continuing the positive effects that appeared after the implementation of the project continues to show interest, both academically and industrially (Misopoulos, Michaelides, Manthou, & Michaelides, 2018). The sustainability, component of postmodern society focuses on three directions: social (impact of the project on people - the beneficial effects brought to the community in which the project activities take place), environmental (impact on natural resources) and economic (profit obtained).

In the literature there are several approaches to the life cycle of a project (quality-oriented model, control-oriented model, risk-oriented model), each of which comprises a number of stages. In general, any project consists of the following stages: project initiation, project planning, project

execution, project monitoring / control and project closure. Also within the project management must be included the principles of sustainability (Chofreh, Goni, Malik, Khan, & Klemes, 2018). The first stage has the role of identifying and defining the problem that is intended to be solved through the project by determining the general objective of the project, selecting the most appropriate solutions and characterizing the interests of stakeholders.

The next stage refers to establishing the purpose and objectives of the project, detailing the activities and their temporal estimation, determining the necessary resources, estimating the costs, etc. The execution of the project consists in the actual development of the project according to the initially established planning - this is the period in which the product is manufactured, or as the case may be, the service / project itself is realized. The monitoring / control stage of the project has the role of identifying deviations from the initial planning, in order to update the activities by applying corrective actions. The closing phase of the project comprises two sub-stages: administrative closure and contractual closure. Normally a project ends after the previously set objectives have been met, according to the performance indicators.

Administrative closure involves the collection and dissemination of all data and information attesting to the completion of the project. This sub-stage includes the verification of the degree of fulfillment of the project objectives, in order to formalize the acceptance of the results by the beneficiary, client or sponsor. Project results can take different forms: reusable results, archived results, accepted results. At the same time, in the administrative closure stage, all project records are analyzed, in order to ensure that they represent the final specifications, the success of the project and the benefits obtained, the archiving of information.

The contractual closure refers to the finalization and settlement of the contract, respectively the solution of any open problems. This is very similar to the administrative closure, in the sense that it requires both the verification of the final product, but also the updating of records and the archiving of data for future use. The successful completion of a project is conditional on the planning, provision and monitoring of resource consumption, as well as compliance with the time limits previously set. The main resources used in a project are: financial, technical, human, informational resources. Inefficient use of a resource leads to losses in the entire project.

In the closing phase, a major emphasis is also given to the sustainability of the project. More and more organizations today pay great

attention to the criteria characteristic of sustainability, in addition to the financial ones (RezaHoseini, Ghannadpour, & Hemmati, 2020). Sustainability considers the way of continuing the activities of the project and implicitly of its effects, after the completion of its implementation, respectively all the measures applied within the project to ensure that the benefits of the target group will be guaranteed in the future. The beneficiary of a project must ensure the sustainability of the project, respectively the continuation of the works executed within the project, the mode of operation of the purchased equipment.

If for the management of the projects during the implementation period the methodologies and the tools have been developed at theoretical and practical level, the processes of transfer of ownership and competences, from the end of the projects, can generate difficulties. The present research is motivated by the need for a new approach to the processes of closing projects in the context of ensuring a high sustainability. In the processes of designing and implementing the priority projects is ensuring the appropriate degree of achievement of the results through the indicators. The sustainability of the project exceeds quantitatively and qualitatively the results of the project and relates to their impact in relation to the system of needs or opportunities. The study aims to provide an operational tool for the management teams recommended to be applied in the closing processes of projects to ensure sustainability. Therefore, if in the first part different notions will be presented regarding the closing stage of the projects, taking into account all the sustainability requirements, in the next part all these data will be used to define an instrument to guarantee the sustainability of the project, that was applied in the project development stage. This paper is a first step for organizations that implement projects in various fields of activity and that often face the problem of maintaining the positive effects created, in order to continue activities even after the completion of the project and implicitly distributed funding.

2. Conceptual delimitations regarding the closing stage of the projects

In order to study how the project closing phase should take place, in order to accomplish the requirements of sustainability a systematic search of the of the specialized articles from the field was carried out,

the following aspects being researched: project life cycle, characteristic stages of a project, specific elements of each characteristic stages of the project, conceptual delimitations regarding the sustainability of the projects, identification of the main factors that influence the

sustainability of the projects. Regarding the data collection, the articles published in certain well-known journals in the economic field were studied, in which different aspects related to the closing processes of the projects were presented, taking into account the requirements of sustainability. Also, in order to carry out a detailed analysis of publications in the field, special attention was paid to media articles, as well as national and international conferences, in which various topics were addressed on the sustainability of projects and their life cycle. Using the Scopus, Proquest Central, Google Scholar and Web of Science databases, the search was conducted in July 2020. For the search were used the following keywords: "project" , "sustainability", "closing stage", "project management", "project tool". Specialized articles from the field that included search terms in the text, abstract, keywords, or title were selected for research. Thus, 350 articles resulted. After the elimination of recurrent articles, those that were not written in English, as well as studies that generally approached the closing processes of projects without highlighting their particularities, it reached a number of 21 articles that were analyzed in depth.

Lately, the way of carrying out the characteristic phases of a project has changed significantly. Today, companies manage projects, increasingly using computer systems and algorithms for storing and processing information, which allows a better analysis of each characteristic stage. The closing phase of the project refers to the totality of the executed processes, in order to complete all the activities at the level of the project management processes for the formal conclusion of the project, respectively of the contractual obligations. Also during this stage it is established whether the project was completed prematurely (it is the case of canceled projects, stopped before completion or which are in a difficult situation). Increasingly, the project closure phase is given increasing importance, as at this stage the causes that led to the registration of deviations are identified: insufficient allocation of resources, erroneous initial planning, changes in the strategy of the institutions. , departure of some key people from the project, time exceeding. In the closing phase of the project, all the documentation regarding the whole life cycle of the project is collected: the project summary (all the information that was the basis for starting the project), the economic study of the business (supporting documents related to the project budget), project planning and its execution plan, the final report of the project. In certain special situations, when some contracts cannot be formally closed (unfinished clauses, complaints, etc.) or when certain activities / results need to be transferred to other units of the project organization, specific transfer procedures may be created and established. In the closing phase of the

project, it is necessary to carry out a post-project analysis, so that the information obtained can be used in the future, and the activities carried out will produce positive effects in the future.

Often in the closing phase of the project there are various problems related to insufficient budget, lack of resources, requests from stakeholders that can not be resolved in time (Zohrehvandi, Khalilzadeh, Hajizadeh, & Cheraghi, 2017). It goes without saying that the success of this stage is influenced by the successful completion of the previous stages, there is a need for clear planning of resources, time and costs, as well as simple documentation that is easy to understand by each member of the project team. The main processes characteristic of the closing stage of the project are represented in the figure below (figure 1).

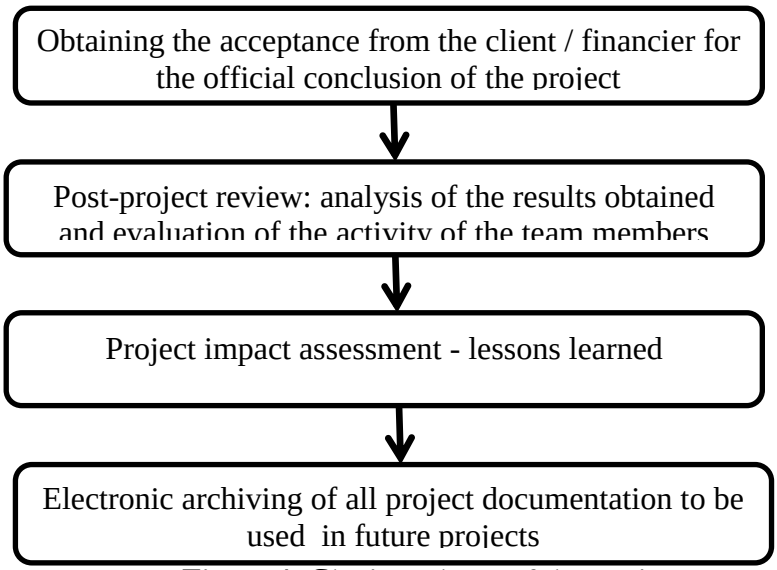

Figure 1. Closing phase of the project

Source: authors' own contribution

The end of the project is made upon receipt of the acceptance from the financier / client, respectively when all project activities have been completed, obtaining the characteristic results previously established. An important process of the closure phase is the analysis of the results obtained, in the sense of researching the degree of fulfillment of those initially established and identifying the main factors that have hindered the development of activities characteristic of the project. In the closing stage of the project all the collected data are analyzed, in order to provide recommendations, so that in future projects the same errors will not be

repeated. Thus, the following types of information are collected and researched: data on the execution of works, percentage reports of works performed, measurements of technical performance, all changes required, the way of implementing the required changes, start and end dates of planned activities.

The evaluation of the activity of the team members has the role of establishing the degree of fulfillment of the individual objectives, as well as the project objectives by each person from the project team. Identifying the impact of the project, all the positive effects achieved means a process that requires great attention, as it analyzes the main crisis situations that occurred during the implementation of the project, as well as how to solve them, so that in future projects, when a new case arises that would jeopardize the proper implementation of the project, it should be quickly overcome, based on information and experience gained in the past. All documentation related to an implemented project is archived in the computer system, because it is a starting point for future projects.

A particularly important feature of the closing processes refers to the sustainability of the project, respectively to the transferability of the results. Today, sustainability has become an essential condition that must be met by all organizations in order to maintain their competitive advantage and ensure their progress (Burritt, Christ, Rammal, & Schaltegger, 2020). Sustainability, component of postmodern society is a process that creates a new vision for the community in which the investment project is implemented, in terms of rational use of resources and ensuring the needs of future generation (Martens & Carvalho, 2017).

The concept of sustainability is increasingly encountered in project methodology, in some cases being a key condition, given that almost any activity is carried out in terms of sustainability: the society in which we all live develops by applying the principles of sustainability, the educational level tries to it becomes sustainable by providing clear and concise information that can be applied in the future as well, the industry and implicitly the research carried out tries to present sustainable results.

The sustainability of a project considers the analysis of the way in which the applicant / beneficiary will ensure the functioning of the investment, respectively the actions carried out within the project. The inclusion of sustainability factors in projects is a challenge for both managers and decision makers within an organization (Magalhaes, Moura Ferreira Danilevicz, & Palazzo, 2019). In general, the sustainability of a project can be analyzed from several points of view: the financial aspect, the institutional, organizational, technical aspect, etc. More and more

organizations have started to run their businesses with a view to achieving sustainable results through ongoing projects, while others are trying to implement the principles of sustainable development in the organization's mission and vision (Labuschagne & Brent, 2015).

The financial aspect refers to the ability to cover payments after the completion of the received financing (own funds, new financing). A project is considered to be financially sustainable when it does not run the risk of running out of financial resources in the future. Financial sustainability requires the existence of a positive cash flow for the financial projections made, the existence of sufficient cash for the smooth running of operations).

The institutional aspect refers to the way in which the partners (institutions involved) will continue the activity after the completion of the project, given that they have now improved their performance, following the experience gained and the results obtained during the implementation of the project. Sustainability also refers to the way in which material resources and analyzes carried out in other projects or organizations will be used.

The organizational aspect refers to the existence of a team, which has the necessary training, able to continue the project activities even after the implementation. The technical aspect refers to the totality of the technical dysfunctions that can appear after the end of the project, as well as to the measures identified for its resolution. Thus, organizations are paying more and more attention to sustainability issues, using increasingly proactive business strategies (Ahlstrom, Williams, & Vildåsen, 2020).

The sustainability of a project expresses the need to effectively combine solidarity, equity, eco-efficiency, short and long term economic profitability, in order to meet the needs of stakeholders. Implementing the appropriate solution involves testing of several solutions after their application to see if they meet the needs the project, and if not, they should be adjusted accordingly (Gavetti, & Levinthal, 2000; Nickerson & Zenger, 2004).

Transforming sustainable strategic objectives into specific actions is a complicated process (Marcelino-Sadaba, Gonzalez-Jaen, & Perez-Ezcurdia, 2015). Combining all perspectives on sustainability (economic, social and environmental), given all the missing information from different hierarchical levels within an organization is the main problem that jeopardizes the implementation of the project in good conditions. Sustainability as a holistic approach to management reveals the complexity of the project environment, characterized by the totality of stakeholder interests, dynamism and ambiguity (Keeys & Huemann, 2017). Most experts argue that the management of current projects does not take into account certain aspects

of sustainability, so they need to rethink their implementation strategy (Aarseth, Ahola, Aaltonen, Økland, & Andersen, 2017).

3. The closing processes of projects to ensure sustainability

The results of the research are constituted in an operational instrument that can be applied from the project development stage, which can be a potential guarantee of sustainability. During the implementation of the project, managers must to consider both the efficient collaboration with the external stakeholders (Vlaar, Van Den Bosch, & Volberda, 2007; Bagherzadeh & Brunswicker, 2016), in order to use efficiently the external information, and with the internal stakeholders (establishing the communication systems between the members of the project team, the verification systems, etc.) (Foss, Laursen, & Pedersen, 2011; Lakemond, Bengtsson, Laursen, & Tell, 2016; Bagherzadeh, Markovic, & Bogers, 2019). Thus, it is proposed to implement a flexible software (eg teamwork, projectmanager.com, etc.) which has the role of ensuring communication between the project manager and the project team, as well as between the project manager and the final beneficiaries. The operational tool is represented by a friendly platform through which any member of the project team can view the project status (cloud storage, time tracking, scheduling Gantt charts, milestones and progress reports) in each stage. Also, once the closing stage of the project is completed and all the necessary information is completed, the activities that have been successfully implemented can be observed, as well as the indicators that have not been reached. Managers must be careful because they cannot apply the same algorithm to work on projects even if they are implemented within the same company because they have different attributes (Du, Leten, & Vanhaverbeke, 2014; Bagherzadeh, Markovic, & Bogers, 2019).

The use of this tool is conditioned by the succession of the proposed stages, by the collection and processing of the results but also by the interests of the applicants. In multiple situations, the interests of the decisions affect the closing phase of the projects and implicitly the global performance. The limits of the obtained results are determined by the transparency of all the actions and interests of the interested parties, being considered the hypothesis that they all act in a convergent system. In terms of ensuring sustainability, application of the instrument can generate certain additional costs, which must be accepted by the owners and sponsors. Their degree of predictability is limited and requires the use of experienced human resources in financial management. The sustainability of the projects from

the perspective of the closing phase requires a proactive approach, throughout the life cycle, because in the end, regardless of the resources available, the positive effects cannot be maximized.

In order to ensure the sustainability of the project, it is necessary to draw up a register, right from the design stage of the project, to provide information on how the project activities will be continued after its completion. The main data that it should contain are: how to keep in touch with the people directly affected by the implemented project, the methods used to quantify the results obtained at certain intervals after the end of the project, financial planning, how to ensure funding of certain activities, if they will be continued, details of the beneficial changes brought about by the project (the requirements it has met), and how the results of the project can be applied to other projects or to other fields of activity. A particularly important aspect of sustainability is the transferability of post-project results to other sectors, target groups, respectively the way in which the project results will be disseminated and valued after its completion. In the project closing phase all this information should be re-analyzed in order to establish how the project complied with the specific conditions of sustainability during implementation, but also the beneficiary's ability to ensure that those criteria are met in the period following the project completion.

4. Conclusions

The closing phase of the project is an extremely interesting stage and expected by the beneficiary because in this stage the degree of achievement of the objectives is evaluated, comparing the results obtained with those planned and analyzing how the project will produce sustainable effects. Sustainability focuses on highlighting the positive aspects that will result from the implementation of the project, bringing the credibility of the evaluation process, in terms of the extent to which the project can continue after funding (generation of services, the emergence of a product that meets a specific need, multiplication benefits of investments realized).

Also in the closing phase of the project are analyzed the main problems / opportunities that arose during the implementation of the project and how they produced positive / negative effects on the project, all of which turn into valuable lessons that will be used in future projects by the implementation teams. The transition stage and the acceptance of the project by the final client requires a well-documented and designed process: the manager together with the project team must collect and archive all data and documents characteristic of the project so that the final report can be

easily understood by any person interested in the project activities. In the closing phase of the project, special attention is paid to sustainability because the development of a successful project must maintain the long-term benefits created during implementation, ensuring the transition from a lower to a higher state.

Acknowledgement

„This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CCCDI – UEFISCDI, project number ERANET-MARTERA-PIMEO-AI-2, within PNCDI III"

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