

## LOGICAL FRAMEWORK MATRIX AS A MEANS OF PROGRAM EVALUATION – A CASE STUDY OF PRE-INCUBATION PROGRAM

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**Purpose:** The purpose of the article is to describe and explain the logical framework as a tool for a systematic and analytical process of planning, monitoring, evaluating and managing a pre-incubation program, which is a key component of the process of supporting and developing entrepreneurship and innovation.

**Design/methodology/approach:** The research method used is a case study. The scope of the subject concerns the evaluation of program management using the example of a pre-incubation program implemented by the Foundation and the Enterprise. Indicators with definitions, sources of information and assumed values (level I and II) are provided.

**Findings:** The usefulness of the logical framework matrix as a tool for a systematic and analytical process of planning, monitoring, evaluation and management of the pre-incubation program was confirmed. Attention was paid to the continuous adaptation of the matrix in view of the changing conditions of the project environment.

**Research limitations/implications:** Future research may address the identification of factors influencing the attitudes of participants in pre-incubation programs in terms of increasing their involvement, with the goal of settling program outcomes.

**Practical implications:** Practical solutions involve improving pre-incubation programs and concern the process of their planning, monitoring, evaluation and management. Progress in this area can contribute to an increase in the efficiency and effectiveness of incubation programs, and ultimately to the development of enterprises and the intensification of inter-sector cooperation.

**Social implications:** Social implication refers to the promotion of attitudes based on building inter-sectoral relationships, with the goal of creating shared value.

**Originality/value:** The novelty of the article is the reference of the logical framework matrix as a useful tool for planning, monitoring, evaluation and management of the program on the example of a pre-incubation program (the matrix has so far been used in practice to evaluate development projects). The considerations can contribute to the improvement of pre-incubation

programs and inspire the development of initiatives of this type. The addressees are enterprises, non-profit organizations, universities and leaders in their fields.

**Keywords:** Project Management, Program, Project Portfolio, Pre-incubation Program, Logical Framework Matrix.

**Category of the paper:** Case study.

## 1. Introduction

The dynamics of the modern world impose on organizations the need to constantly adapt to change, which poses challenges to the effective and efficient management of projects, programs and project portfolios. The paper presents selected aspects of project management, looking in particular at program structures and considering measures of program success captured as a group of projects. The study begins with an analysis of the essence of a project, program and project portfolio based on foreign and domestic literature on the subject. It then focuses on the role of program management as a response to dynamic changes in the environment. The next step presents a diagram of the logical framework matrix as a tool that enables decision-makers to comprehensively evaluate a program. The matrix was described and explained to identify key indicators of efficiency and effectiveness, which are the foundation of success in program management. The theoretical content served as an introduction to the scope of the developed case study, which shows the practical application of the concepts discussed in the context of an example of a program implemented based on the pre-incubation model. The case study presents specific challenges and achievements that can inspire other ventures in organizations. In this way, not only the theoretical basis of program management is discussed, but also the practical implications of these concepts on actual organizational successes are presented. The purpose of the article is to describe and explain the logical framework using the example of a pre-incubation program, in the implementation of which it was used as a tool for a systematic and analytical process of planning, monitoring, evaluation and management of activities undertaken in the framework of cross-sector cooperation. Special attention is given to selected indicators for program evaluation by defining them, identifying sources of information and optimal levels from the perspective of marketing, recruitment, program implementation, deployment and participant satisfaction.

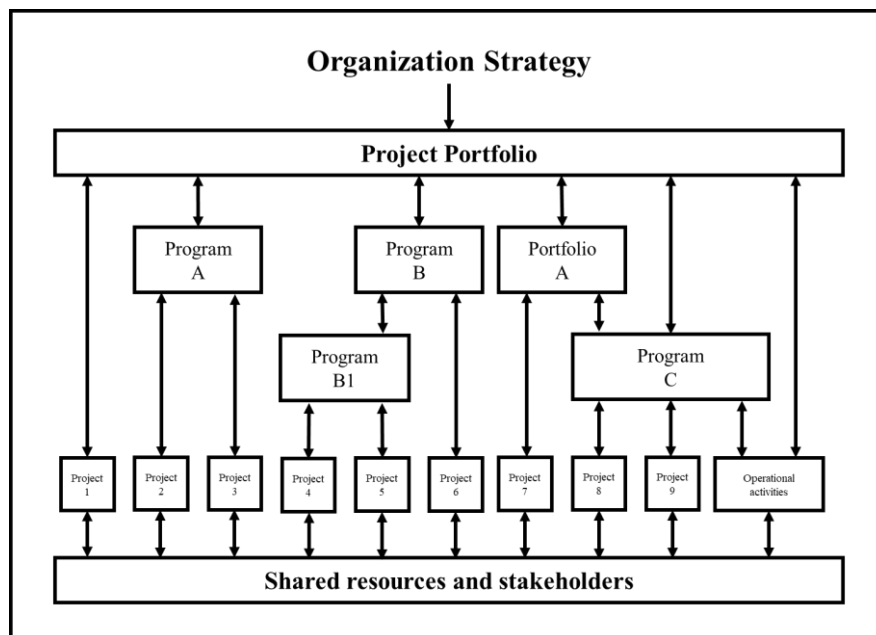
## **2. Project, program, project portfolio - comparison of scope and measures of success**

Today's business environment is characterized by turbulence, complexity and uncertainty, and the social and economic changes taking place are constant, requiring a flexible approach, dynamic action, but also creative thinking. Increasing uncertainty resulting from the intensification of the changes taking place forces the creation of new approaches adapted to organizational conditions. Organizations, including business entities, must respond more quickly to customer needs, react more quickly to the actions of competitors, spot market opportunities and eliminate non-value-adding work. As a result, unique activities are becoming increasingly important in the activities of modern organizations. Projects occur in all areas of the organization's activity, and they are carried out for the benefit of the environment, as well as to solve internal problems. As is known, the importance of projects in the modern world is constantly growing. This is due to the increasing diversity, complexity of problems and the projects required to solve them (Trotsky, 2012; Sadowska, Chmielewski, 2014; Kerzner, 2019; Geraldi et al., 2022; Aghajani et al., 2023). At the same time, the progressive complication of the processes of the environment and the functioning of organizations of various types influences the observed growing demand for professional knowledge in the field of project management (Trocki, Buklaha, 2015; Banas et al., 2023).

A project is a temporary activity undertaken to achieve a unique result, produce a unique product or provide a unique service of high complexity, for the implementation of which the commitment of significant resources (e.g., material, human, financial) is required. The implementation of projects occurs relatively independently of repetitive activities and is associated with risks (among others: technical, organizational, economic), using special methods, techniques and tools of project management. Increasingly, the implementation of multiple projects is observed in organizations. Thus, a multi-project environment is emerging, also referred to as project portfolio management, project program management, corporate/organizational project management, strategic project management, systems approach in project management, multiple project management, project-oriented organization or management by projects (Brzozowski, 2014; Derakhshan et al., 2019; Pinto, 2020; Trocki, Juchniewicz, 2022; PMI, 2019). In the Scopus database, one of the most important literature databases, one can find a total of as many as 387,384 publications that contain the term "project management" in the title, abstract, keywords, and 516,566 containing "program management" ((in turn, limiting the search to the social sciences, the numbers are 57,513 and 71,212, respectively). Narrowing the search of publications to the area of general business, management and accounting, the number of publications referring strictly to project management is greater than the number of publications referring to program management alone (51,852 versus 31,372). Due to the increasing complexity of the functioning of organizations, it is assumed that

there will be a growing interest in project program management in organizations (Papadakis, Tsironis, 2020; Marnada et al., 2022).

The implementation of projects can occur separately or they can be grouped into programs and portfolios. The basis for the scientific discussion of programs is the theory of organization, strategic management, as well as product development, production and change management. In the literature we can find many definitions of program of programs, and they are united by the understanding of them as a group of projects that make up a common, higher order, goal (Pinto, 2020; Sońta-Drączkowska, 2022; Juchniewicz, Trocki, 2022). A program is a set of product-differentiated projects that are linked by the pursuit of a common higher-order goal that would be impossible for individual projects to achieve separately. Project portfolios, on the other hand, are ensembles of projects and programs executed simultaneously in a single organization, managed to achieve its strategic goals. The programs and projects included in a project portfolio need not be interdependent and interrelated. An organization may have multiple project portfolios, created within its organizational units (Figure 1). While projects have defined objectives and their scope is gradually concretized during the project life cycle, programs have a larger scope than projects and more significant benefits can be achieved. Portfolios, on the other hand, have a business scope that varies according to changes in the organization's strategic goals. Project success is measured by the quality of the project's product, customer satisfaction, budget maintenance and timeliness, while program success reflects the degree to which the needs and benefits for which it was undertaken were met. The success of a portfolio is determined by meeting the requirements set for the portfolio components (IPMA, 2015; PMI, 2018; Cabala, 2018; Trocki, Juchniewicz, 2022).



**Figure 1.** Relationship between projects, programs and project portfolio.

Source: PMI, 2021, p. 12.

The most important criterion for evaluating the success of a project is assumed to be the achievement of the assumed overarching goal, within the planned time, within the assumed costs, corresponding to the assumed quality parameters of the project, which refers to the consideration of the criteria of the so-called golden triangle, which include: time, budget and project goals. Researchers note that the stakeholder perspective is increasingly being taken into account, and the determinant of success, depending on the type and nature of the project undertaking, will be how the product of a given project is perceived by the customers for whom it was carried out. Examples of measures of success will be the level of customer satisfaction, the improvement of the company's competitive ability, the increase in market share, as well as the profits made possible by the company through the completion of the project. The value that is generated by the project's product for the customer is also an important factor in assessing the success of the project as a whole. The above description of success applies to the implementation of projects of an internal nature, when the organization implements a project for its own needs, being both the initiator, principal and contractor of the project. When an organization implements an external project, its interest is in the realization of the project's objective and the collection of payment, and it is not important what the further effects and results of using the project product will be (Kandefer-Winter, 2015; Agbejule, Lehtineva, 2022; Carujo et al., 2022).

### **3. Project program management as a response to business changes**

Program management is a form of organizing project activities that helps address the problem of translating strategy into operational activities. By incorporating components of organizational change management and focusing on vision and business benefits, programs are much more able than projects to reflect an organization's long-term strategic goals. Projects tend to focus on performance goals related to delivering project deliverables within specific project constraints: budget, time, scope, required quality criteria. Programs, on the other hand, encompass the organization's long-term development vision and strategic goals, as well as the need to change and transform ways of doing things. The implementation of programs is accompanied by a great deal of ambiguity and uncertainty. They require a strategic perspective in decision-making, incorporate a systems view and represent a learning approach, reducing ambiguity over the course of the program. The popularity of program management has been on the rise in recent years due to the fact that organizations need to implement business changes in an efficient and effective way and to direct ongoing projects to benefit the organization (Sońta-Drączkowska, 2018; Pinto, 2020; Aghajani et al., 2023).

Programs in an environment characterized by a relatively high level of uncertainty and ambiguity are identified as a particularly useful form of organizing activities, so that constant validation of goals and established assumptions is needed, with the implementation of changes in the organization often causing resistance and not being easy. In the face of reluctance and resistance to change, this should be accepted as a natural trait of people, who treat change as something unknown. In the case of a very significant, strategic and organization-wide change, the management structure of the program should be adapted and thought out, and the organization of the project could take place in the form of a top-down controlled program. On the other hand, for changes of an incremental and streamlining nature, it is reasonable to implement, for example, in the form of a goal-sharing type program (Cabala, 2018; Derakhshan et al., 2019; Kerzner, 2022; Sońta- Drączkowska, 2022).

#### **4. Logical Framework Matrix as a means of program evaluation**

The Logical Framework Approach (LFA) is a systematic and analytical process for planning and managing goal-oriented projects. The approach was developed in 1969 for U.S. government agencies and is based on a worldwide study conducted by Leon J. Rosenberg in 1970 and 1971. The Logical Framework Approach is one of the more ubiquitous project management tools that has been widely used for project planning and evaluation in international organizations. The logical framework approach provides a series of tools and methods that are used at various stages of project work. Their task is to show the interactions and consequences between the key elements of the project, that is: problems, objectives, actors, activities. This is served by methods such as project stakeholder analysis, problem tree, selection of objectives and strategies for proceeding. Hence, the role of LFA is to think about the project with the goal of structuring the process of working on it, including by pointing out weaknesses and strengths, as well as the rationale for initiatives (Hosseinzadeh et al., 2019; Martinez, Cooper, 2019).

LFA supports project planning, monitoring of project implementation strengthening periodic project evaluation. The main result is the Logical Framework Matrix (LFA), which summarizes in one structure the main features and specifications of the project, including the indication of measurement, becoming a suitable tool for the process of monitoring the implemented activities and evaluating the results achieved. The method is applied throughout the project life cycle, from initiation through planning and implementation, to project closure. The logical framework approach can also be used to plan, implement and evaluate programs implemented by organizations. The matrix consists of four columns and four or more rows (Figure 2), which summarize what and how the project plans to accomplish, what the key assumptions are, and how outputs and outcomes will be monitored and evaluated ([wikis.ec.europa.eu](http://wikis.ec.europa.eu)).

Narrative summary	Objectively verifiably indicators	Means of Verification	Assumptions
<b>Program goal:</b>			
<b>Project purpose:</b>			
<b>Output:</b> Results 1 Results 2. etc.			
<b>Inputs: activities &amp; resources</b> Activity 1.1 Activity 1.2 Activity 2.1 Activity 2.2 etc.			

**Figure 2.** Logical framework matrix.

Source: Martinez, Cooper, 2020, pp. 1239-1253.

The vertical axis contains the project narrative or hierarchy of objectives, at the very top of the hierarchy of objectives we find the goal, which defines the program objective to which the project contributes. The project objective describes the expected outcome, and outputs are the results achieved as a result of activities. Activities/resources include the processes carried out and inputs used. The horizontal axis is used for project monitoring and evaluation. This means that each project is monitored through objectively verifiable indicators and means of verification (Martinez, Cooper, 2019).

The project should be evaluated according to the logical framework matrix at the start of its implementation, and the matrix itself should be evaluated, as it should be revised and updated on an ongoing basis. As the name suggests, it serves to assess the logical consistency of individual project areas and is an intermediate tool between its verbal description and mathematical and financial description. Despite the significant application value of the logical framework, there are criticisms that indicate that the meaning of the logical framework is sometimes overvalued. The matrix is used primarily as an evaluation tool in development projects. In addition, the focus on the provisions of the logical framework can be the basis for the selection of means and methods to achieve project objectives that are closer to the objectives of the contractors than to those assumed by the principal. Moreover, the search for linear relationships that exist between the problem and its solution influences the way the project is planned, the selection of indicators, the tools and methods of project implementation used, as well as their evaluation. Isolating the solution to a given problem from other factors (e.g., political, social, economic) is not possible, which is why, when referring to development projects, the necessity of using extensive evaluation tools and putting projects in a broader context is emphasized (Metelski, 2013, pp. 162-163).

The Logical Framework Matrix was used at the stage of formulating, organizing, implementing and evaluating the Pre-Incubation Program. A prerequisite was the willingness of the Enterprise to take action in cooperation with the academic community, involving them in solving the identified business challenges. The assumptions of the logical framework matrix were translated from the level of a single project to the level of the organization's program and strategic goals, considered as the main objectives. The framework developed by Leon J. Rosenberg was used at the stage of planning activities in a form adapted to the conditions of intersectoral cooperation and later used at the stage of evaluation and assessment of activities undertaken. Below, the authors presented the effects developed on the basis of the logical framework in the form of indicators, which were successfully used at the stage of program evaluation.

## **5. Case study - pre-incubation program**

The pre-incubation program was established in connection with the prolonged changes in the Polish education system. The enterprise, in cooperation with the foundation (Program Coordinator), took the initiative to create a corporate pre-incubator based on intersectoral relations (business, science, third sector) wanting to increase the level of its openness to change and innovation, as well as its relations with external and internal stakeholders, while creating a positive image of the enterprise as an innovative and engaging organization in the development of the academic community and the startup idea. The activities were also inspired by the desire to seek innovation in selected functional areas of the Company, through the active involvement of students, experts and tutors.

Participants in the Program were students of Poznan University of Technology, Poznan University of Life Sciences, Poznan University of Economics and Adam Mickiewicz University in Poznan. The Program was aimed at people who were interested in the development of innovative projects and startup thinking, and who wanted to gain practical knowledge of entrepreneurship, and who intended to test the developed solutions in corporate practice.

At the stage of defining and planning the Program, representatives of the Enterprise and the Foundation determined how the program would generate value, defined internal and external goals and a schedule of activities, created a structure to support the implementation of the program and defined key performance indicators. These were used to monitor the degree of implementation of the defined objectives, at the various stages of project delivery in the Program. Two levels were defined for each indicator, a lower level and a higher level, which formed the basis for the payment of additional compensation to the Foundation, in accordance with the adopted Program budget.



The tables below define and describe the key performance indicators for the Pre-Incubation Program from the perspective of marketing (Table 1), recruitment (Table 2), program implementation (Table 3), implementations and participant satisfaction (Table 4).

**Table 1.**

*Marketing for the pre-incubation program*

Indicator	Definition of measure	Source of information	Value-Level I	Value-Level II
Number of accepted applications to the Program	The number of accepted applications sent by those with active student status who answered the open-ended questions in the questionnaire, attached a resume, and consented to the processing of personal data by the Company for the purpose of recruiting for the Program.	Data generated in the form of a report from the <i>erecruiter.pl</i> system	75	125
Foundation's social media reach and user engagement	Number of audiences, activity, reactions and comments for publications posted on social media and the Foundation's website. Summary prepared by two phases, i.e.: recruitment of participants and program implementation.	Report prepared based on information from social media and the Foundation's website	10k 10k	15k 15k
Publications of the Company and external organizations	Number of publications posted in social media and on the website of the Company, Poznan universities, student circles and organizations, and in professional media.	Report prepared on the basis of published materials on the Program	20	40

Source: own elaboration.

Adopted values for the indicator of enrollment in the Program, were determined on the basis of previous activities carried out for the benefit of the Poznań academic community by the Company and the Foundation.

**Table 2.**

*Recruitment of participants to the pre-incubation program*

Indicator	Definition of measure	Source of information	Value-Level I	Value-Level II
Number of participants accepted into the program	The number of participants, selected from the accepted applications, on the basis of interviews held with representatives of the Foundation, according to the adopted questionnaire, which allowed the selection of personae that meet certain criteria.	Signed declarations and consents by program participants	20	30

Source: own elaboration.

In the recruitment process, it was assumed that the candidate-student for the Program, should be entrepreneurial, open to new challenges and willing to work in a team. The student should want to develop interpersonal skills to be able to communicate efficiently and effectively with other team members, mentors and industry experts. Also important to develop was the ability to make decisions and work under time pressure. In addition to the aforementioned qualities, it was also important to the Program's authors that the participant be motivated and committed. This required the right attitude and determination, but also a willingness to learn from mistakes and continuously improve one's skills. The recruitment efforts undertaken

included activities aimed at recruiting at least 20 students to the Program, meeting the predefined criteria.

**Table 3.**  
*Implementation of the pre-incubation program*

Indicator	Definition of measure	Source of information	Value-Level I	Value-Level II
Number of projects created under the program	The number of projects that were presented in front of a group of experts, during the meeting crowning the implementation of the first stage of the Program (Gate I)	Report prepared by the Foundation from the Gate I meeting	5	8
Number of completed projects	Number of projects that were presented in front of a group of experts, during the culminating meeting of the Program (Gate III)	Report prepared by the Foundation from the Gate III meeting	4	6
Number of implemented solutions in the enterprise structure	The number of solutions or products that, following the Gate III meeting, by decision of the top management, have been implemented or will appear in the Company's future offerings	Report prepared by the Foundation on the meeting of the top management	2	3

Source: own elaboration.

Participants in the program, following a FRIS survey conducted by a certified trainer, were divided into interdisciplinary teams based on their thinking and acting styles. The individual teams were assigned real business challenges, developed by a group of experts from selected functional areas of the Company. The students, over the course of three stages, with the support of the Enterprise's staff and experts from the Foundation, developed a solution to their assigned business challenge by following an imposed workflow, which included: Gate I - problem identification and research; Gate II - options for solving the problem; Gate III - selecting the best solution.

**Table 4.**  
*Implementation of the pre-incubation program*

Indicator	Definition of measure	Source of information	Value-Level I	Value-Level II
Degree of satisfaction of Program participants	Degree of satisfaction and satisfaction of participants with participation in the Pre-incubation Program, examined using an online survey consisting of Likert scale questions and open-ended questions	A survey conducted by the Foundation	4 <	4,5 <

Source: own elaboration.

Conducting evaluation surveys allowed us to find out students' opinions about the Program. This indicator made it possible to assess the degree of satisfaction with the Program, as well as to identify areas for improvement in case of program renewal.

The pre-incubation program analyzed in the article, to the authors' knowledge, was the first program of its kind in Poland based on the concept of a corporate pre-incubator. In its assumptions, it functioned on the LAB studio concept, developed and implemented in 2012 at Oulu University of Applied Sciences in Finland, and currently used in Belgium, Nepal,

Austria or Slovakia, among others (Bielicki, Stevenson 2020; Bielicki, Weinert 2021). LAB studio is an interdisciplinary education model aimed at training skilled professionals and self-organized teams focused on establishing startups in specific economic sectors (Heikkinen et al., 2015).

## 6. Summary

The presented case study describes and explains the possibility of implementing a program as a group of projects in the Polish economic conditions in the context of ventures of an initial nature - pre-incubation. Knowledge of program management issues is important in the era of a dynamic environment, which forces the constant search for competitive advantage and the combination of strategic management issues with project management, which can be successfully used to implement the strategic objectives defined by the organization. The authors described and explained the possibility of using the logical framework in planning, implementation and evaluation of the project program, which is not commonly used (application primarily in so-called development projects), to the detriment of program effectiveness and efficiency. A practical case study was provided - a pre-incubation program implemented in cross-sector cooperation. Reference was made to the identified indicators and their impact on the achievement of the program's goals. At the same time, the applicability of the logical framework matrix in programs, used so far primarily by international organizations for investment projects, was confirmed. The authors recommend applying the logical framework approach by adopting the logical framework matrix as a tool for program evaluation at program initiation, implementation and renewal. In addition, it is essential to evaluate the matrix itself and adjust it on an ongoing basis.

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