

19 FEATURES OF PROJECTS IMPLEMENTED IN MIDDLE-SIZED ENTERPRISES – RESULTS OF EMPIRICAL RESEARCH

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1. Introduction

Project implementation becomes more and more common in business practice nowadays. Projects are implemented not only by companies which are profit-oriented but also by different organizations with non-business aims. The answer for the question what makes different bodies undertake such a challenge as the realization of a unique and full of risk undertaking is an interesting issue. Additionally, while implementing projects it is often necessary to cooperate with other organizations which leads to further difficulties.

The implementation of projects is connected with extra effort made by an organization. That is why it can seem that projects are implemented only by big enterprises. However, business practice shows that also smaller enterprises are executors or co-executors of projects. Organizations which employ from 50 to 249 people constitute a group which is very active in the projects implementation. It seems interesting to analyze certain features of undertakings implemented by these companies such as factors which decide about the implementation of a project, its duration or budget.

The aim of this paper is to define certain features of projects implemented by companies employing from 50 to 249 people.

2. Certain aspects connected with the implementation of contemporary projects

Projects have been implemented since the ancient times and their results have led to the development of civilization. [16, p. 14]. On the other hand, project management with the usage of management techniques applied nowadays was started by a military program of making an atomic bomb. ²

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² It was a project called Manhattan which started in the USA in 1941; more information on this project is available in: [2].

During its implementation, efficient methods of planning and controlling such big problems, which started to be applied in civil projects in the forties of the 20th century, were designed. They included e.g. American assistance for the European countries called the Marshall plan.³ In subsequent years and decades, there has been a quick increase of practical applications of project management methods in business practice and at the same time the knowledge on planning, controlling and coordination of such undertakings was quickly developing.

Changing requirements of clients together with technological progress make unrepeatable actions become more and more important in all activities. The management of such activities which at the same time become more and more complicated requires a specific approach. The conducted research shows that projects are more and more common in business practice [7, p. 149-156]. The increasing importance of such undertakings has led to the isolation of the part of management called project management.

It must be underlined that a term “project” does not mean “a plan of activities and proceedings” [18, p. 933] but has a more complex meaning close to the word “an undertaking”,⁴ which means “a complex activity, carried out according to a schedule which as the result of its complexity can be designed by means of special methods” [5, p. 193]. This problem results from the difficulties in translating the terms “project” and “project management” from the English literature into the Polish one.

The most important features of projects are as follows: purposefulness, unrepeatability, complexity and specification. Unrepeatability of projects means they serve to satisfy individual needs which require the realization of tasks with unrepeatable character. [19, p. 356]. The complexity of such undertakings means that people who are employed in many departments or in different companies must participate in their planning, management and implementation. The specification refers to three dimensions of projects:

1. time – a beginning and an end of a given undertaking must be clearly defined [9, p. 176],
2. costs – they must be estimated but at the same time it is necessary to foresee a situation in which they may change during the phase of implementation [1, p. 93],
3. autonomy – project must be implemented regardless of the activities of the remaining parts of a company or companies [10, p. 236].

Projects must be implemented in such a way which enables the achievement of their parameters which are as follows⁵:

- Requirements which can be both very different and numerous. That is why requirements catalogues are sometimes created. The situations in which requirements are formalized are common e.g. in building engineering, food

³The implementation of these projects and their impacts for Europe (the beginning of integration processes) are described in: [2].

⁴For this reason a term “undertaking” will be used interchangeably with a term “project”.

⁵Prepared on the basis of: [20, p. 20-21].

source: Kozłowski R., *Features of projects implemented in middle-sized enterprises - results of empirical research* w: Adamik A., Lachiewicz S., *Methods and Concepts of Small and Medium - Sized Enterprises Management*, Technical University of Lodz Press, A Series of Monographs, Lodz 2011, pp. 333-348.

industry, chemical industry. It is necessary to define requirements interchangeably, ensuring at the same time no limits for creativity.

- The costs of project implementation must be defined both for the whole project and for its stages. It will enable to carry out monitoring and will not allow to exceed the budget of an undertaking.
- The schedule of a project is defined as time interval (e.g. month, year) or a specific calendar period. It is done both for the whole undertakings and for its stages.

It is difficult to obtain the highest levels for all project parameters. E.g. when the attention is paid to the achievement of the highest quality, it leads to the increase of costs. When a project timetable is shortened, its costs will increase. In this situation, it is necessary to choose an acceptable level of the parameters of a given undertaking.

In business practice, there are lots of different projects. It is necessary to divide them according to certain criteria. In the literature, there are lots of different project typologies. Chart 1 presents some examples of criteria and types of projects.

Table 1. Sharing criteria and types of projects

| Criteria | Kinds of projects |
|---|---|
| Source of order origin | Internal (result from internal needs of an enterprise), external (ordered by clients). |
| Orientation | Of objects (their aim is to change physical objects), of processes (their aim is to create new processes or modify the ones which already exist in an organization) |
| Level of novelty and originality | With a high or low level of novelty for project executor |
| Size (range of component activities, time of implementation, number of executors engaged, costs of implementation) | Small, big, enormous |
| Field of application | Research, industry, building engineering, social, infrastructure and so on. |

Source: own preparation on the basis of: [20, p. 20-21] after: [8, p. 15].

D. Lock divided projects into [12, p. 16-17]:

- engineering, constructional, petrochemical and mining ones- their implementation is connected with a high level of organizational risk and a lot of expenditure exceeding the abilities of one executor which makes it necessary to cooperate with others,

source: Kozłowski R., *Features of projects implemented in middle-sized enterprises - results of empirical research* w: Adamik A., Lachiewicz S., *Methods and Concepts of Small and Medium - Sized Enterprises Management*, Technical University of Lodz Press, A Series of Monographs, Lodz 2011, pp. 333-348.

- production ones- they mean a design of a new product and of a technological line to produce it and are implemented in a given enterprise and its environment,
- managerial ones – they implement organizational changes e.g. during a development of organizational structures, organizational restructuring, switch of responsibility, introduction of the programs of trainings or systems for staff evaluation and so on,
- research ones- they are connected with unpredictability of the different parts of their implementation, high level of risk and high costs.

M. Pawlak differentiated the following **areas of projects management** [15, p. 28]:

- **functional**, which includes planning of a project, its management and monitoring, documentation and assurance of proper communication,
- **institutional** which means a choice of a concrete organizational solution (organizational structure), definition of task division, division of competencies and responsibilities,
- **instrumental** which includes a choice and application of proper techniques of projects management (techniques of planning and monitoring, solving problems and evaluating),
- **personnel** which means the management of a project team (the choice of a project manager and its participants; definition of necessary trainings and creation of a motivational system, finding solutions and lessening conflicts).

Project management is always connected with a high level of specificity and difficulties in implementation. The risk of failure is high and in order to limit it, early planning and early identification as well as the noticing of early signals of mismanagement are very important. Table 2 presents the features of projects and the features of their management as well as symptoms which point at the appearance of irregularities in the field of management.

Table 2. Characteristic of project management

| Features of projects | Features of projects management | Symptoms of improper projects management |
|--|--|---|
| Exceptionality | Uncertainty | Over expenditure |
| Long duration | Unpredictability | Deviation from a plan |
| Complexity | Implementation difficulties | Neglect of technical requirements |
| Considerable participation of external executors | Dependence on external partners | Problems with contract enforcement |
| Intensive cooperation | Difficulties in planning | Communication distortions |

source: Kozłowski R., *Features of projects implemented in middle-sized enterprises - results of empirical research* w: Adamik A., Lachiewicz S., *Methods and Concepts of Small and Medium - Sized Enterprises Management*, Technical University of Lodz Press, A Series of Monographs, Lodz 2011, pp. 333-348.

| Features of projects | Features of projects management | Symptoms of improper projects management |
|---------------------------------|---|--|
| Multilateral dependencies | Necessity to visualize | Coordination difficulties |
| High level of risk | Special monitoring done by top management | Criticism made by public opinion, reluctance to courageous decisions |
| Considerable potential benefits | Special interest of top management | Attacks made by competitors |

Source: [21, p. 320] after: [20, p. 27].

As the result of the observation of projects implementation, certain repeatability of actions connected with the realization of these undertakings was noticed. As the result of these analysis, project life cycle divided into four phases was created [4, p. 68]. The number of these phases and their range differs and depends on the authors. However, the following stages are the most common:

1. start-up of an undertaking,
2. definition of a project,
3. planning and organization,
4. execution,
5. close-out.

During a start-up the analysis are conducted which aim is to justify the implementation of a given project. These analysis can refer to the different fields such as e.g. market, internal organization, economics of a potential undertaking, social needs and so on. In order to evaluate such investments, it is more and more common nowadays to use computer programs which are permanently improved [13, p. 9]. The definition of the so-called project initiative is the effect of this stage and it must include:

- a list of benefits deriving from the project implementation,
- potential, negative effects when a project is not implemented,
- estimated costs and time of implementation.

A defined initiative of a project is presented to a unit or to a person entitled to take a decision whether to implement it or to resign from it- it can be e.g. company management. Later a project is analyzed and evaluated. Sometimes external specialists e.g. employees of higher education institutions are engaged in order to execute the mentioned tasks in a professional way. The analysis and evaluation on this stage refers to:

- necessity to implement a given project,
- possibilities to implement it (financial, human, organizational, technical and so on).

If a project was positively evaluated and it was stated that it was in accordance with company aims, a decisional units allows for its implementation.

In the phase of project definition, a project is clarified and a detailed description is prepared which allows for a complex analysis of its feasibility and profitability. Such an undertaking, as every decision connected with investments must be preceded by an analysis of sources and risk factors as well as possibilities to measure them [14, p. 48]. Analysis and risk evaluation is done in the following areas:

- market,
- technology,
- organization,
- finances,
- personnel.

The evaluation of project risk is done taking into consideration the requirements of a given project, its costs and time of implementation. On this stage, apart from defining the level of risk, the activities which aim is to reduce the identified risk are proposed.

The analysis of costs and advantages connected with the project implementation should be conducted in two categories:

1. Costs and advantages which can be defined by means of concrete sums,
2. Costs and advantages which cannot be defined by means of concrete sums.

It must be also remembered that an analysis of investment effectiveness must include the whole project life cycle from a preparation phase to a moment of finishing the investment [17, p. 84].

It is the top management of a company which takes a decision whether to implement a project or to withdraw from it on the basis of the analysis prepared in the phase of the project definition.

The detailed planning and the organization of all resources necessary for the project and its implementation are the next important stages. After the accomplishments of these two stages, a project is closed. A project can be regarded as a finished one, when the goals which were defined in preliminary stages are achieved. Then the achieved results are given to a client. While accepting an implementation of the project, the client evaluates first of all the results of an undertaking and if any irregularities are noticed, corrections can be required. When all potential defects are eliminated, a final acceptance takes place which is done by the users of project effects from a given organization and experts representing a client. Then a protocol of acceptance is prepared and clearings are carried out between a client, partners and project team.

It is necessary to prepare a final evaluation of a project in which all the activities carried so far are analyzed and the conclusions for the future drawn. A person or a team who are carrying out an evaluation are very important in this case. It is connected with a reliability and objectivism of this evaluation. An evaluator must be independent from a project executor and from a client and must possess necessary knowledge in the field of the implemented project.

Proper project management makes planning and control over all the activities necessary to achieve project aims easier. In practice it is common that

inexperienced project managers want to execute all the activities quickly and as cheaply as possible and that is why some stages of an undertaking e.g. planning are omitted. The effects of such behavior are always reverse to what was intended. The accomplishment of a project is prolonged and its certain stages are much more expensive which is caused by correcting mistakes. [11, p. 16-17]. In the implementation of undertakings it is necessary to remember that they are to be implemented in line with a theory of praxeology.⁶

3. Characteristics of a sample

The preparation for multi aspect research started from the definition of aims. The identification of projects features such as a scope of activities, their duration, budget, cooperation with other bodies were one of them.

When a survey was designed, its electronic form was placed on a server and a special application which allows to collect data and to gather them in xml⁷ format was prepared. The tools which enabled to import the data from xml files to Excel⁸ were also created.

The main research was preceded by a pilot study. It was particularly important because of the usage of advanced electronic tools which served to:

- communicate with respondents filling in the questionnaire,
- gather the obtained data,
- convert and analyze the data.

The pilot study was conducted in November 2006. A group of 46 enterprises and organizations from all the chosen sectors of economy participated in it. All the remarks submitted by respondents during a pilot study were collected and analyzed in details. The data obtained during the pilot study were carefully analyzed. Then all the necessary corrections were introduced both in the very form of the questionnaire and in all the tools which were used including the computer programs.⁹

In order to maintain a high level of safety of the collected data a lot of protection and limits in the access to the server including an electronic form of the questionnaire and data bases were applied. For this reason a web-site for logging in was created which aim was to verify users. In order to ensure a technical support for respondents a module “HELP” was placed in an electronic form of a survey. Thanks to it, a respondent could read all the information on the construction of a questionnaire at any moment as well as explanations on the expressions and notions included in it.

⁶ More information on praxeology can be found in: [5, p. 207-447] and [22, p. 162-264].

⁷ XML (eXtensible Markup Language) – universal programming language designed to describe data, the so-called extensible markup language; it is independent from a platform which allows for an easy exchange of data between different systems after [22, on 15th January 2011].

⁸ Microsoft Office Excel- commercial spreadsheet by Microsoft.

⁹ More information on research can be found in : [8, p. 163-173].

The main research was conducted from 8th December 2006 until 10th October 2008. All the projects which were analyzed were only the projects implemented by enterprises and other organizations. The information was obtained from people already professionally active who had studied at the University of Lodz and in the Academy of Management in Lodz.

All the respondents who filled in the questionnaires were well prepared to do it. During their tertiary education, they all acquired necessary theoretical knowledge connected with the topic of this research.¹⁰ What is more an electronic form of a questionnaire included some information explaining e.g. the essence of the project or a definition of logistic operator. People who were filling in the questionnaires possessed knowledge on the described projects on the basis of participant observation.

The respondents were introducing data on projects into an electronic form of the questionnaire. The data were checked taking into consideration their complexity and cohesion and when any lacks or inconsistencies were detected, a respondent was contacted and asked to correct them. Having accomplished these activities, the data were added to a data base. When the research was over, on the basis of the information gathered in the data base the analysis presented in this paper were prepared. All the analysis were prepared using Excel program by Microsoft.

A research sample was a deliberately chosen group of projects implemented in enterprises or in other organizations. A respondent filling in the questionnaire described in it the biggest project taking into consideration its budget, duration and the number of employees engaged. The attention was paid to the fact that only one questionnaire from the implementation of a given project could be collected.

Altogether 1012 projects were analyzed . Among these projects, the majority of them was implemented in Lodz voivodeship – more than 77%. It results from the fact that the respondents were the former students of higher education institutions from Lodz who fulfilled the following functions:

- project managers,
- members of project teams,
- employees of companies not involved in a project,
- employees of an organization ordering an implementation of the project,
- people whose duty was to ensure the financing of a project from the funds of the European Union,
- employees of companies cooperating with the executors of a given undertaking e.g. dealing with trainings of project team members,
- trainees delegated to help in the implementation of projects,
- employees of institutions supervising the implementation of a given project, e.g. employees of Gmina office,

¹⁰ Respondents have accomplished such courses as: project management, logistics, role of advanced technology in company's development and others.

– external experts which task was to evaluate the implementation of the project and its effects.

From all the other voivodeships, the majority of projects was implemented in the neighboring Masovian Voivodeship (about 9%). A bit more than 6% of the analyzed projects covered the whole country. 273 undertakings were implemented in middle-sized companies¹¹ which is about 27% of all analyzed projects. Further analysis will refer only to this group of undertakings.

4. Some information on companies implementing the analyzed projects

The analyzed projects were implemented in the organizations which had different activities such as: production, building engineering, services, commerce, administration and education. It happened sometimes that a given organization was operating in more than one sector e.g. commercial production and service company. Figure 1 presents the number of middle-sized companies per sector.

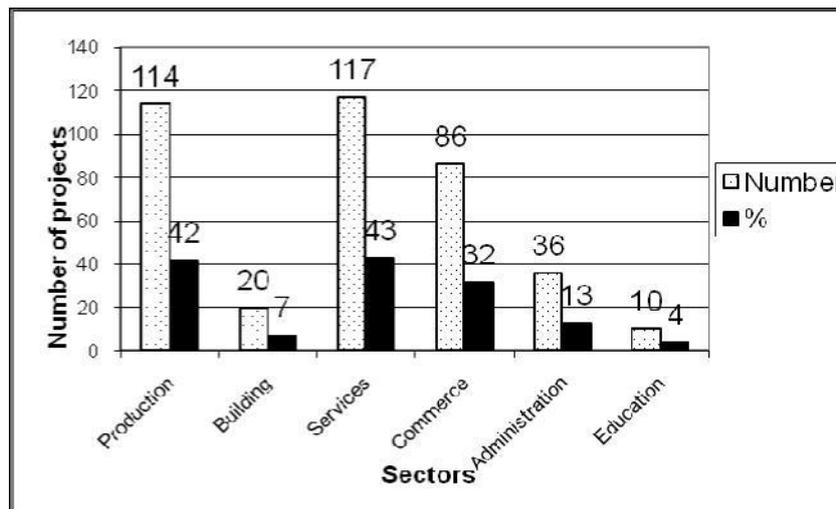


Fig. 1. Sectors in which middle-sized enterprises participating in the research operated

Source: own preparation.

The majority of the analyzed companies operated in the sectors of services and production- in each of them more than 40%. The companies which dealt with sale constituted 32% of all the analyzed companies. The companies active in the sector of education and units of public administration and self-government administration was the smallest group.

¹¹ The criterion of the number of people employed was applied and a company employing from 50 to 249 people was considered to be a middle-sized enterprise.

source: Kozłowski R., *Features of projects implemented in middle-sized enterprises - results of empirical research* w: Adamik A., Lachiewicz S., *Methods and Concepts of Small and Medium - Sized Enterprises Management*, Technical University of Lodz Press, A Series of Monographs, Lodz 2011, pp. 333-348.

Although the analyzed companies were the companies employing from 50 to 249 people 119 of them (which is 43.5% of all the companies analyzed in this paper) had branches. It confirms their activeness.

In order to implement projects, 53% of companies cooperated with other bodies. 71 organizations cooperated with more than one body. It means that almost a half of the enterprises which decided to cooperate with other organizations cooperated with more than one enterprise.

5. Reasons and the most important factors which influenced a decision to implement the analyzed projects

Figure 2 presents the reasons for which the analyzed organizations decided to undertake such a challenge as the implementation of an analyzed project. The respondents could point at more than one factor as it is common in business practice that numerous reasons influence the implementation of projects.

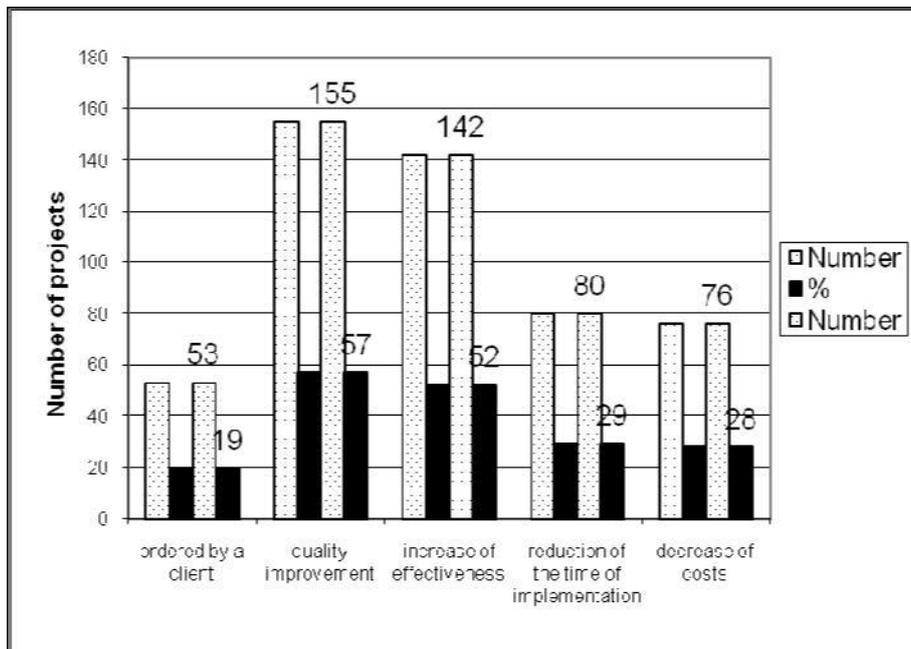


Fig. 2. Reasons for the implementation of the analyzed projects
Source: own preparation.

While analyzing Figure 2 it can be stated that “external” factors of a company were the dominating factors which led to the implementation of projects. A need to implement a project resulted in the majority of cases from a necessity to improve the quality and increase the effectiveness (this answer was pointed respectively by 57 and 52% of the examined enterprises). The next

reason provided by enterprises was a desire to shorten the time of production cycles or of the delivery of services – 29% of answers. By using the projects, 28% of analyzed organizations wanted to decrease the incurred costs. All the reasons enumerated in this paragraph have led to an implementation of internal projects oriented on the improvement of the analyzed companies.

In 19% of cases, the implemented projects were ordered by external clients. This means that the realization of orders which were received exceeded their standard activities and the companies were forced to organize and implement a project often in cooperation with other companies.

The respondents were also entitled to provide different reasons for which they decided to implement a project. Here the following reasons were given: – improvement of communication within a company,

- creation of a scientific infrastructure,
- improvement of safety and working conditions,
- used more ecological solutions,
- adjustment of organization to legal requirements.

The respondents were also asked about the most important reasons to undertake a decision of implementing a given project. In this case it was possible to point at more than one answer.

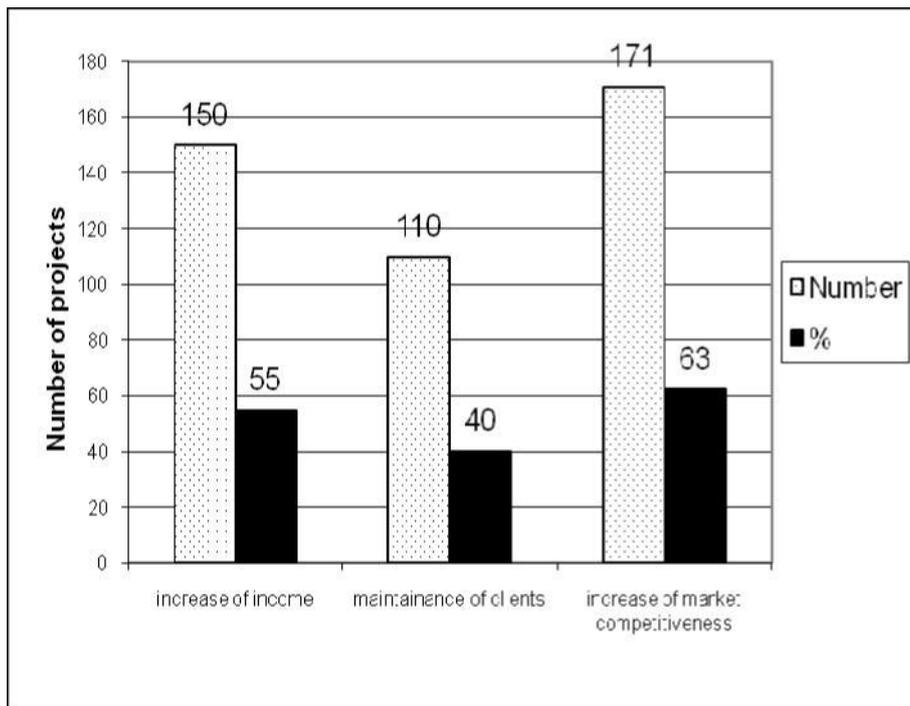


Fig. 3. Main factors influencing a decision to implement a project
Source: own preparation.

The companies which participated in the research pointed most often at a willingness to increase market competitiveness by implementing the analyzed undertakings (up to 63% of answers). It was followed by an intention to increase company's income which was the answer of 55% of respondents. The third reason among the most popular ones was a desire to maintain current clients and this was the reason mentioned by 40% of companies.

The respondents could also enumerate other important factors which led to a decision on the implementation of the analyzed undertakings. They gave the following ones:

- increase of employees' competencies and improvement of cooperation between them,
- limit of fines resulting from environment pollution,
- increase of occupational safety and decrease of the number of accidents,
- adjustment of the rules on company's functioning to binding legal requirements,
- improvement of company's image,
- creation of the base of knowledge.

6. Schedule, budget of the analyzed undertakings and the level of the achievement of aims

One of the main project parameters is the time of its implementation. For the needs of the research the following time-intervals were differentiated:

1. up to six months,
2. from six months to 2 years,
3. longer than two years.

Figure 4 presents the collected data. There is a visible tendency that the longer projects were the least numerous.

The most numerous were the projects which lasted up to six months (53%). Only 37% of the analyzed projects lasted from 6 months to 2 years. Merely 9% of all analyzed projects implemented by companies lasted longer than 2 years. The presented results show that enterprises employing from 50 to 249 employees prefer projects which are relatively short.

source: Kozłowski R., *Features of projects implemented in middle-sized enterprises - results of empirical research* w: Adamik A., Lachiewicz S., *Methods and Concepts of Small and Medium - Sized Enterprises Management*, Technical University of Lodz Press, A Series of Monographs, Lodz 2011, pp. 333-348.

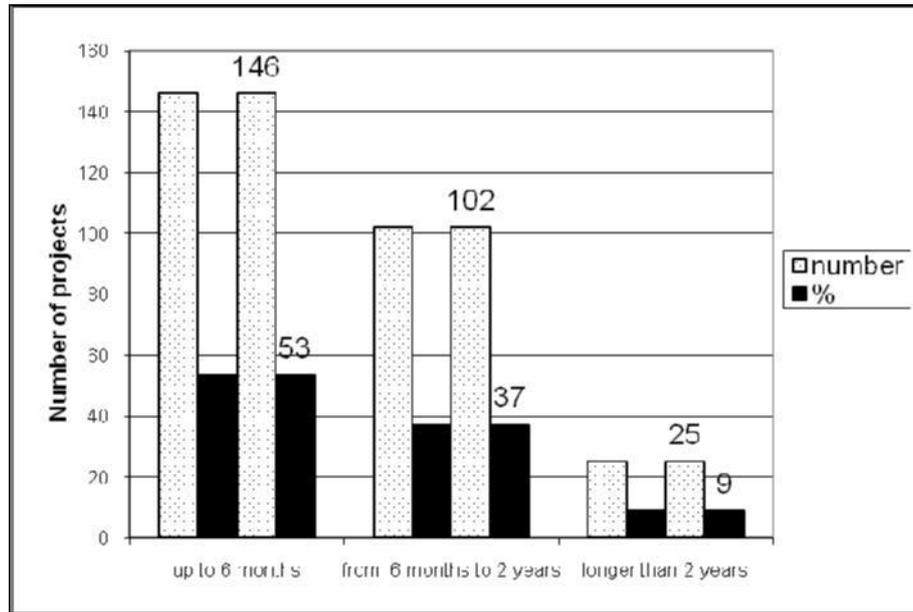


Fig. 4. Time of projects duration
Source: own preparation.

Budget is another dimension which characterizes a project. Figure 5 presents the information collected during the research.

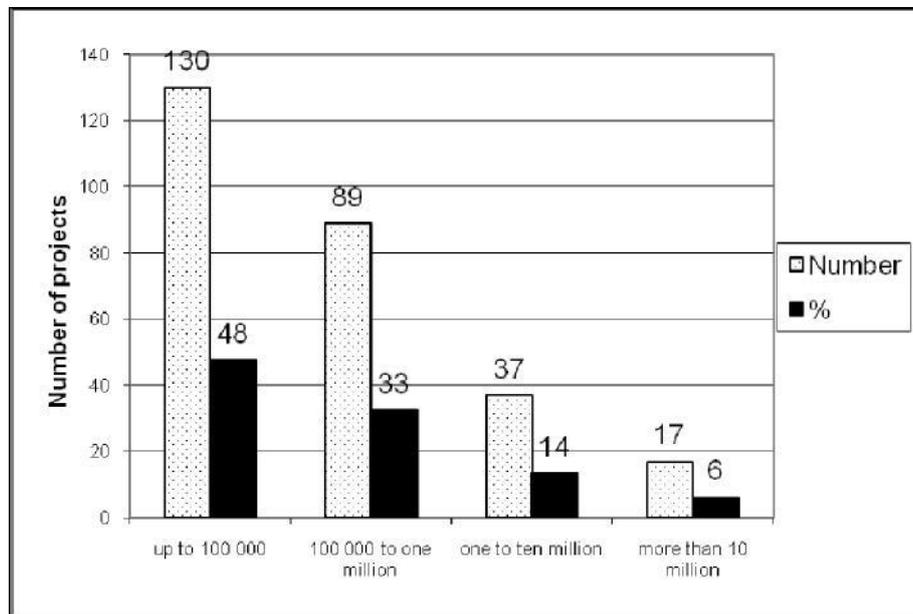


Fig. 5. Budget of the analyzed projects
Source: own preparation.

In case of the size of project budget, the following groups were differentiated:

1. up to 100,000 PLN,
2. from 100,000 PLN to 1 million PLN,
3. from 1 million PLN to 10 million PLN,
4. more than 10 million PLN.

Almost a half (49%) of the budgets of the analyzed projects implemented by companies employing from 50 to 249 people did not exceed the threshold of 100,000 PLN. The projects with budgets between 100,000 and 1 million constituted up to 33%. The projects with budgets between 1 and 10 million constituted only 14% of the analyzed projects and the ones with budgets of more than 10 million PLN only 6%.

In case of the budget, similarly to the duration of projects, the analyzed companies showed the same tendency: when the size of the budget increased, the number of projects decreased.

The companies which participated in the research were asked about the final effects of the projects and more precisely whether they achieved all the aims defined at the stage of planning. Figure 6 presents the information which was gathered.

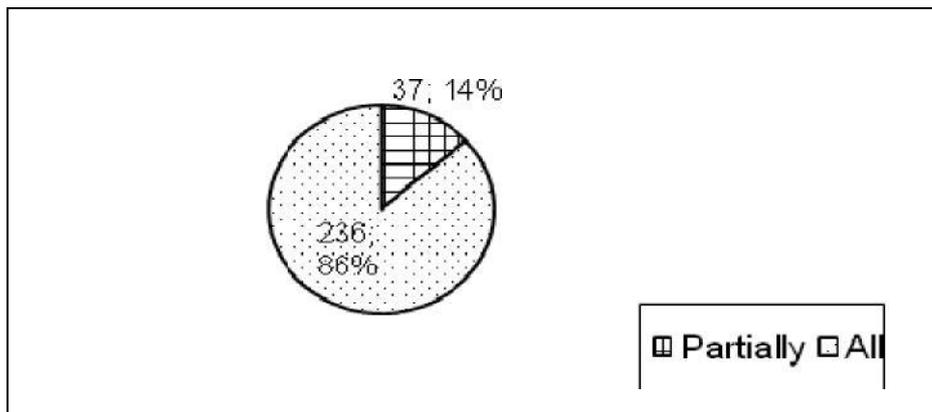


Fig. 6. The level of the achievement of project aims

Source: own preparation.

The results presented in Figure 6 prove that the analyzed projects implemented by companies which participated in the research ended up with a lot of success. Even 86% of the analyzed projects finished with the achievement of all the defined aims. Only in case of 14% of projects just some of the defined aims were achieved. There were no totally failed projects.

7. Summary

The projects implemented by middle-sized enterprise which participated in the research have certain features e.g.:

- predominance of internal reasons which led to the projects implementation. It proved that the majority of these companies were trying to achieve an internal improvement and increase their possibilities; this shows their strong desire to develop,
- medium-sized enterprises tend to implement short projects- more than a half of all projects implemented by them did not last longer than 6 months,
- organizations employing from 50 to 249 employees tend to implement projects with budgets which are relatively low – almost a half of them implemented projects with budgets up to 100,00 PLN and one third of them with budgets not exceeding 10 million PLN.
- the companies which were questioned state that they have achieved at least part of the defined aims.

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