

EVOLUTION OF RESEARCH IN PROJECT MANAGEMENT. AN ANALYSIS OF THE RESEARCH RESULTS PUBLISHED IN THE PERIOD 1999-2017

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ABSTRACT

In this paper an analysis was made of the evolution of research results in the field of project management in the period 1999-2017. Based on the literature and the objectives pursued, four research hypotheses were formulated, of which two were confirmed. There is a strong link between the number of publications in the analyzed period on project management and the number of publications in the field of management. The most important contribution from the quantitative point of view of the results of research in the field of project management is published in journals outside the domain "Business, Management and Accounting".

KEYWORDS: *project, management, research, results*

JEL CLASSIFICATION: *M10, M19*

1. INTRODUCTION

Project management research has multiple implications for learning and practice in this area. The most commonly used methods and techniques in the management of project time or cost are the origin of the scientific research efforts in the field in the first stages of project management development.

The results of research in the field of project management, whether they belong to research projects or individual research, took the form of publications in particular. Of these, the most important are articles published in journals or conferences and books. In project management, a form of dissemination of research results is the publication of guidelines and standards, which constitute a synthesis of research and practice in the field. The best known is Project Management Body of Knowledge.

Project research and project management publications are not restricted to project management, nor to general management, not even to the economic field. Project management was, in the early stages of its development, very strongly anchored in areas such as R & D and construction. Subsequently, in the last decade of the 20th century, the expansion of the IT field has led to the development of techniques for the management of specific projects in this field, some of which have later been taken over in other areas of general character. A bi-univocal relationship between projects and the current state of development of the economy work on projects has become generalized in almost all areas either for the whole activity of organizations or for some of their departments.

The consequence of this trend is the emergence of numerous articles and other publications on project management in publications not dedicated to project management, management or the economy but to specialized fields such as: renewable energy, sustainability, research - development,

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education, construction, IT. These publications also produce an increase in knowledge in project management.

In the current state of research in project management, the issue of the relationship between the results published in specialized journals (in the field of project management), results published in managerial or economic journals and results published in journals belonging to other fields of study has not yet been studied. It has not been established the influence that publications in the journals specialized in project management have on other specialized publications in journals outside of this field, nor the extent to which publications in economic or other journals influence the publications in the journals specialized in project management .

Like other disciplines in the field of management, project management has a syncretic character using methods and techniques with a strong mathematical basis, but also in other scientific fields: statistics, sociology, operational research, computer science.

For these reasons, research is needed to show the evolution of the results published in the journals specialized in project management and the relationship between these publications and those in magazines belonging to the economic or other fields of expertise. Also, there is no historical project management approach comparable to that existing in other areas such as accounting, marketing or strategic management.

2. LITERATURE REVIEW

Although project management as a discipline through specific methods and techniques began in the second half of the last century, research in the field has experienced a strong push in the second half of the last decade of this century. Project Management has gained a place in general management theory from three perspectives: as a management system, as a form of project integration into the organization, and also as the basis of new theories about XXI century organizations.

The majority of authors believe that, in the current state of knowledge, there is already a contrived global project management approach does not exist in a unified theory in this field (Boutinet, 2005). The same author believes that the origin of practice in project management is very remote in history and yet in the Middle Ages "the project concept was still not part of medieval thinking".

Engwall (1998) considered that the theoretical foundations of project management include, as with other managerial theories, a "articulated collection of best practices" taken from the study of the projects made so far (especially in North America). According to this author, the research has had the role of synthesising and transferring knowledge from the good practice stage of a project to a collection of good practices that are advisable for any project to be initiated or underway .

Garel (2013) considers that, in order to study the evolution of project management, it is first necessary to define the purpose and objectives of this study. This author appreciated that a history of project management evolution as a discipline should not be a history of singular practices. He considered that project management has gone a long way from "managerial practices" to "management models" in recent centuries and a long way from rationalization to standardization over the last decades.

Navarre (1989) showed that the creation of project management as a scientific discipline and field of study had four original sources: engineering sciences; managing major projects; socioeconomic development schemes of colonies and management of innovations. Engineering sciences have helped to create and develop project management as a discipline because of their own needs of long-term methods to manage military or civilian projects. Based on the demand for the development of such methods, the first methods of programming the execution of the projects that formed the basis of the project management development as a scientific discipline and research area appeared. Navarre's argument supports the idea of a more in-depth study of the relationship between project management publications (in specialized journals) and publications dealing with project

management in magazines from other fields. The management of major projects in the public domain has intensified the demand for tools and techniques specific to the substantiation of project initiation decisions. Some colony development schemes have intensified the accumulation of technical and economic knowledge (Panama's case is the most relevant), but in our view Navarre's hypothesis is only partially confirmed.

Not colonial development has increased the development of project management as a discipline. The development of project management as a discipline coincided with the investment and development programs of developed and developing countries, a trend followed by former colonies when they became independent (after the 1950-1960 in most cases). The proliferation of R & D had a recognized role in setting up project management as a scientific discipline and in amplifying the demand for project management.

With regard to the studies on the evolution of project management, Garel (2013) considers that there were three main approaches: the presentation of case studies on large projects that have become emblematic (Latour, 1996; Lenfle and Loch, 2010; Garel and Mock, 2012) ; analysis of representative projects for certain firms and / or sectors of activity (Whittle, 2004; Scranton, 2006; Caron, 2005); a historical-typological approach (Scranton, 2008, Kozak-Holland, 2011).

Another important issue in the literature is the synchronization of project management theory with the evolution of economic theory. Niknazar and Bourgault (2017) gave some examples of economic theories used to classify projects. Transaction cost theory was used by Turner and Keegan (2001) and also by Turner and Simister (2001). Principal-Agent Theory was used by Turner and Müller (2004, 2005) as well as by Mahaney and Lederer (2010). The examples presented by Niknazar and Bourgault lead to the hypothesis that there have been attempts to integrate concepts specific to new economic theories within the theoretical approaches to project management.

Evolution of theory and research in project management should be seen in the context of evolution of theory in social sciences in general. Floricel et al. (2013) have shown that the extension of research in project management can use as a resource some theoretical accumulations from other social sciences precisely due to the syncretic character of management.

In the beginning, project management has been influenced conceptually by inputs from economics, finance, theory of decisions in the contemporary period, new concepts used (temporary organizations, coordination mechanisms, PMO) place project management at the confluence of three social theories fundamentals: activity theory, actor-network theory and structure theory. The authors consider that their work has demonstrated that there is "the potential for building such a toolkit by combining five dimensions of practice with three fundamental social theories, in order to encourage project management scholars to use this approach."

As can be seen, research and project management theory have included inputs from the practice of general economic theory, general management, engineering sciences, and other social sciences. There has been no study to date to what extent project management research published in specialized journals has been quantitatively correlated with that on projects in other areas of activity.

3. RESEARCH METHODOLOGY

Since there has been no analysis of project management research so far, this research has had three objectives:

- analysis of the main conceptual approaches in the literature regarding the evolution of research in the field of project management;
- analysis of the evolution of the main publications resulting from the research in the field of project management in the period 1999-2017;

• highlighting the main trends and correlations between research results in project management and research results in other scientific fields (general economic theory, management. The research methodology, designed and followed to achieve the research objectives, covered the following main steps:

1. *Establish research objectives* taking into account the main results achieved so far in this field;
2. *Research of literature* to find similar studies conducted at national or international level on the evolution and analysis of research project management results. The research of the specialized literature concerned the period 1990-2017 and previous researches of this period were studied in order to find out the origins of the first theoretical approaches of research in project management;
3. *Establishing the hypotheses of the research* on the basis of the study of the specialized literature and the issues addressed so far in the study of the evolution of the scientific research results in the field of project management;
4. *Selection of relevant databases for study*. Several international databases have been analyzed but the right one from the point of view of the reliability and completeness of the results has been considered sciencedirect.com;
5. *Extract relevant information from international databases* and process data on the results published in the period 1999-2017. Data have been extracted and processed on the results published in the field of project management, in the economic field and on the whole of the scientific domains.
6. *Analysis of the results obtained* and confirmation or refutation of research assumptions (where applicable).
7. *Formulate research findings* and set targets for future research in the same field (for hypotheses and unplanned or unexplained issues in this study).

For the research carried out, on the basis of the objectives pursued and the conclusions of other previous research, the following hypotheses were formulated:

H.1. There is a strong positive correlation between the number of publications in the period under review on project management and the number of publications in the field of management.

H.2.a. Most of the publications on project management have the largest share of Business, Management and Accounting publications.

H.2.b. The share of publications on business, management and accounting projects management in all publications related to project management has seen a steady upward trend over the period under review.

H.3. There is a significant link between the weight of publications on Business, Management and Accounting projects management in all publications on project management and the weight of publications on project management in all management publications.

4. RESEARCH RESULTS

The analysis of research results in the field of project management focused on: the evolution of the number of annual publications on project management in the period 1999-2017; the structure of publications on the subject of project management; the share of publications related to project management in all publications dealing with management; the share of Business, Management and Accounting publications on project management in all publications dealing with project management; analysis of correlations between project management publications indicators.

The evolution of the number of annual publications on project management over the period 1999-2017 is shown in the following chart. It can be seen that the number of annual publications on project management registered a steady upward trend and increased more than five times over the

period 1999-2017, from 10704 in 1999 to 53632 in 2017. The number of publications Project management has tripled over the period 1999-2011 and has grown at a similar rate from 2012 to 2017.

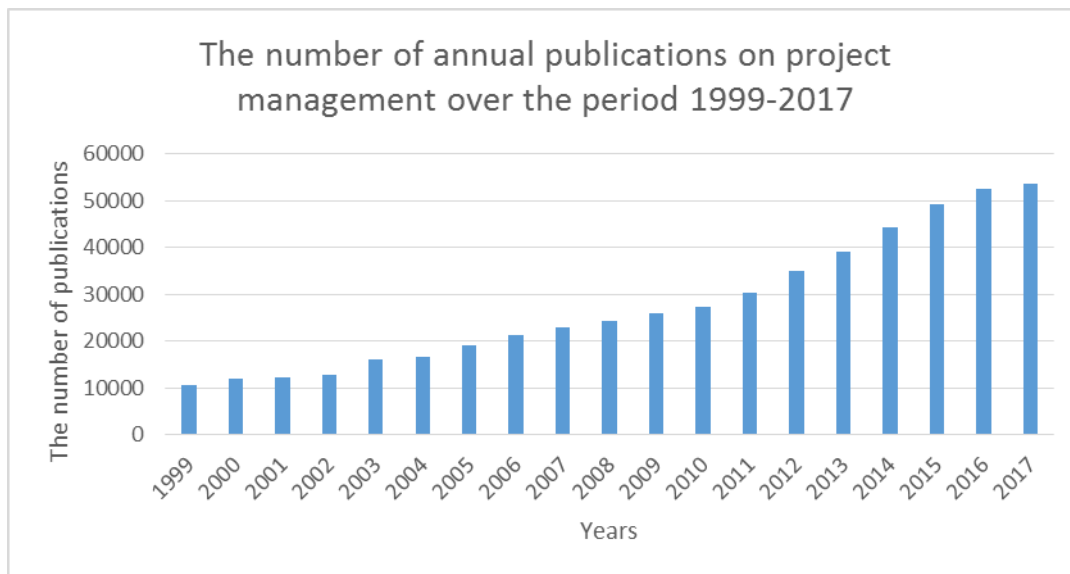


Figure 1. The number of annual publications on project management over the period 1999-2007

Source: sciencedirect database)

The structure of the publications on the subject of project management is as shown in the following chart. It can be noticed that during the analyzed period the most important weight (over 88% of all publications) belonged to the articles published in the journals. They were followed by books (over 10% of project management publications) and reference work with 1.19% of project management publications. However, the share does not fully reflect the nature, usefulness and impact of the research carried out. Books require a longer period of development and have a big impact on the public interest in project management (researchers, trainer, teachers, project managers, consultants) and the articles are especially dedicated to researchers in the field.

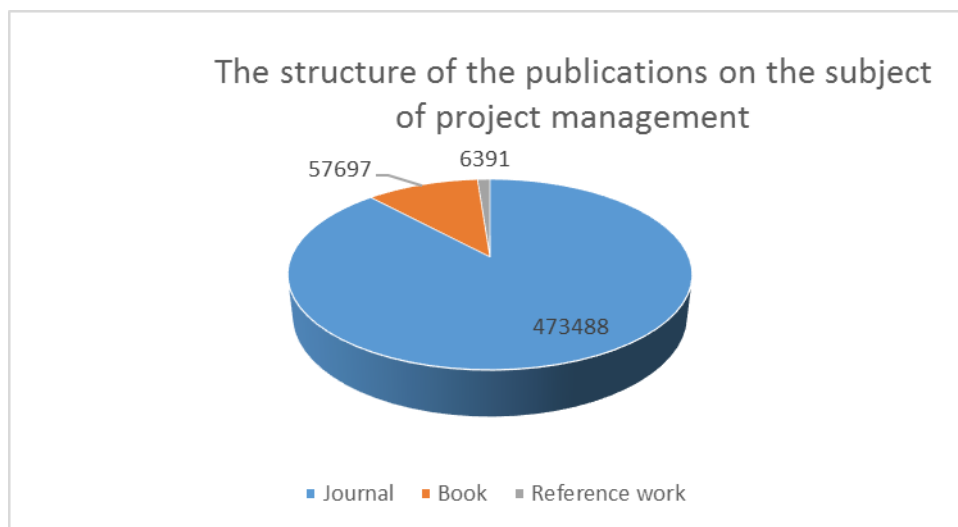


Figure 2. The structure of the publications on the subject of project management

Source: sciencedirect database

The share of publications on project management in all publications on management (presented in the following graph) increased from 26.74% in 1999 to 36.36% in 2017.

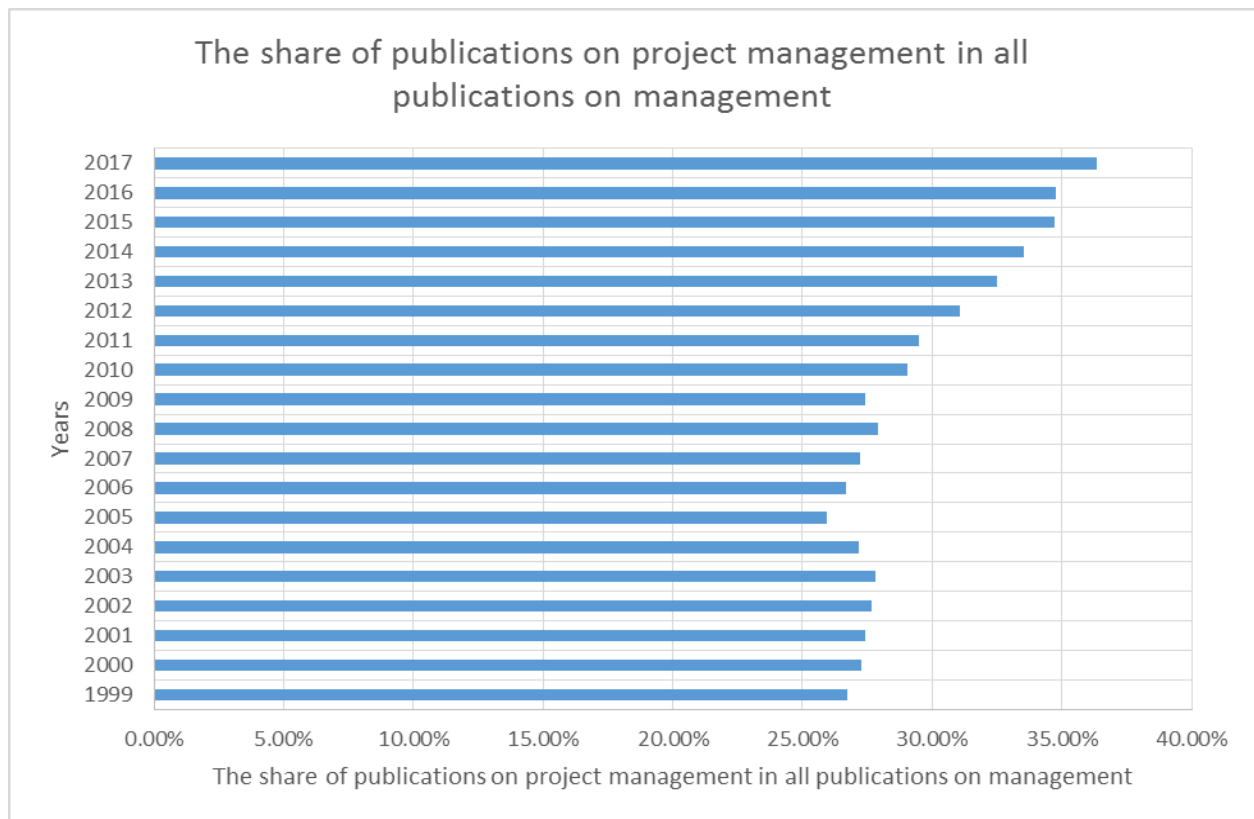


Figure 3. The share of publications on project management in all publications of management
(source : own calculations using sciencedirect data)

The registered growth did not have a continuous upward trend, in 2004, 2005 and 2009 registering a reduction in the share of publications related to project management in all the publications related to the management. However, the increase in the share of publications on project management in all publications on management reflects the central focus of project management research in all management research and the amplification of demand for such research topics in view of enlargement tendencies of projection of organizations during the contemporary period.

The share of Business, Management and Accounting publications on project management in all publications dealing with Project Management, presented in in the following graph has seen a downward trend over the period 1999-2017, which is surprising if we report this to the trend in publications in the field of management and project management. Thus, hypotheses H.2.a. and H.2.b of the research are not confirmed.

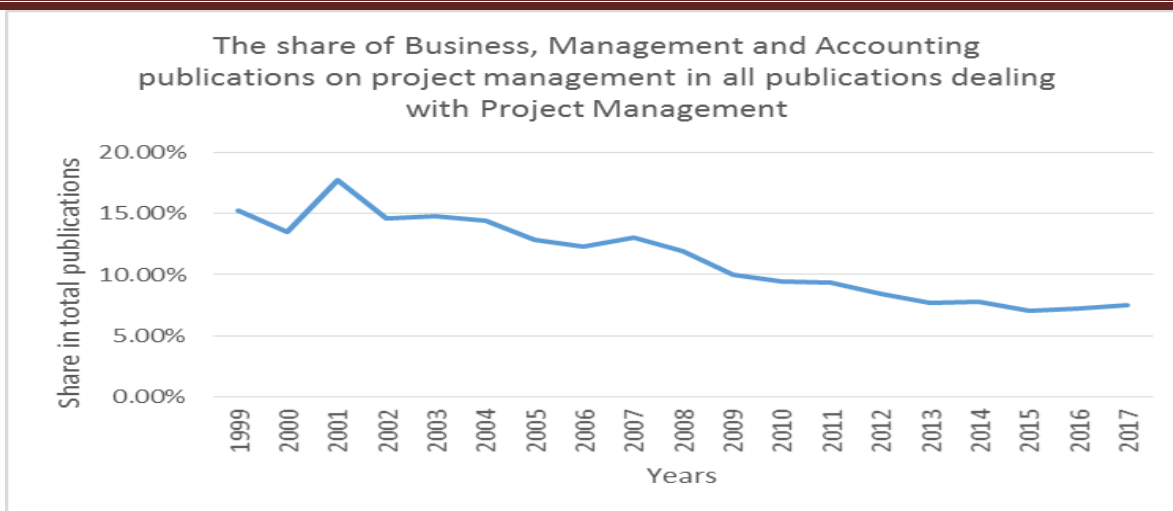


Figure 4. The share of Business, Management and Accounting publications on project management in all publications dealing with Project Management

Source: own calculations using sciencedirect data

This situation may have two explanations. Firstly, project management is very closely related to the applicability of engineering science research results. Secondly, in an economy and society where there is an increase in project organization in all areas, it is normal that many publications on project management can be found in areas other than Business, Management and Accounting.

To verify hypotheses H.1. and H.3 was the analysis of the correlations between the main indicators of publications in the field of project management (table no. 1)

Table no. 1 Analysis of the correlations between the main indicators of publications in the field of project management

	1	2	3	4	5
1.Number of publications on project management (all domains)	1.000				
2.Number of publications in the field of management	0.989	1.000			
3. Publications on project management in the field of Business, Management and Accounting	0.938	0.947	1.000		
4.The share of Business, Management and Accounting publications on project management in all publications dealing with Project Management	(0.919)	(0.944)	(0.804)	1.000	
5. The share of publications on project management in all the publications that were related to management	0.948	0.894	0.840	(0.819)	1.000

Between the number of publications in the period under review on project management and the number of publications in the field of management is a strong positive correlation ($r = 0.989$). The H.1 hypothesis is confirmed, the number of publications related to project management having the same ascending trend as management publications. Between the share of Business, Management and Accounting publications on project management in all publications dealing with project management and share of publications on project management in all publications on management,

there is a significant but negative relationship ($r = -0.819$). The third hypothesis of research is confirmed.

The synthesis of the main hypotheses of the researches carried out and their confirmation is presented in the following table.

Table no. 2 Confirmation of research hypotheses

Research hypotheses	Status
H.1	Confirmed
H.2.a	Not confirmed
H.2.b.	Not confirmed
H.3	Confirmed

However, the research has a number of boundaries, of which the most important is the focus on single database concentration (sciencedirect). The second important limit is the absence of the qualitative side in measuring the contribution of different categories of results (publications) and the evolution of research in the field.

5. CONCLUSIONS

The evolution of research in the field of project management can be best illustrated by studying the results of research over the past two decades. The analysis of the main research results during the period 1999-2017 aimed mainly at checking the trends of the correlations existing between the main indicators of the publications in the field of project management. In this research it was considered that the publications in the field of project management represent the most significant result of the researches carried out in the field.

Of the four hypotheses formulated, only two were confirmed. The first confirmed hypothesis was that between the number of publications on project management and the number of publications in the field of management is a strong positive correlation. The second confirmed hypothesis is that there is a significant (negative) link between the weight of publications on the subject of Business, Management and Accounting project management in all publications on project management and share of publications on project management in all publications in the field of management.

The most important result obtained in this research is the non-confirmation of the H.2.b hypothesis, which shows that from the quantitative point of view, the most important contribution to project management research belongs to publications outside the field of Business, Management and Accounting. This result can be explained by the particularities of project management as a discipline (strongly linked to technical fields) by and by the amplification of project-oriented organizations in contemporary society, which implies an increase in the demand for specialized research in project management.

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