

Project Portfolio Management in the Public Service: A Literature Review

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Abstract: This study explores the recent use of Project Portfolio Management (PPM) methodologies in the public service. A literature review was conducted to identify the characteristics of public organizations that initiate the adoption of the PPM, the methodologies and practices that have been used and other relevant aspects of the topic.

Keywords: Project Portfolio Management, Public Service, Literature Review

PROJECT PORTFOLIO MANAGEMENT IN PUBLIC SECTOR

Private and public organizations aim to grow, and, for this, is necessary to coordinate changes and the organization's strategy. Projects are responsible for organizational changes and the strategies' implementation are done through the projects execution (Rwelamila and Purushottam, 2012). Lee et al (2008) defined a project portfolio as a set of projects that will be implemented within a central coordination. The portfolio management conducts the projects of an organization to ensure that the right set of projects will be done through the allocation of the necessary resources to them. The project selection and resources' allocation must be reviewed and amended periodically to reduce project costs, minimize the risks to which the organization is exposed and optimize benefits the proper projects' execution (Dettbarn Jr. et al, 2005). Furthermore, the portfolio is a way to keep the organization focus on the long term (Munson and Spivey, 2006), making the long term clearer for the organization (Miller and Evje, 1999).

Anderson (2008) presented the objectives of the portfolio management as: define goals and objectives, make trade-offs, manage risks, monitor portfolio performance, and achieve the organization's objectives. Complementary, to achieve its objectives, the portfolio management has three main steps: strategic considerations, individual project evaluation, and portfolio selection (Gabriel et al, 2006). The risk management is also a concern in the portfolio management due to the portfolio's risk should be appropriate due to the portfolio's financial return (Pereira and Veloso, 2009).

The public administration is different from the private sector and this differentiation has impacts in the public sector's objectives that, among others, are: maximize the innovation, maximize the number of direct beneficiaries and maximize the number of agents indirectly benefited (Duarte and Reis, 2006). Another difference, according to Stentoft et al (2015), is that the services provided by the public sector to citizens are done without a direct payment. In the same way, Baker and Solak (2014) defined the portfolio success in the public sector as the maximization of the expected social utility. On the other hand, Scheinberg and Stretton (1994) stipulated that the main parameters to measure the portfolio's success in the public sector are defined by the political authorities or contracts made with partners. In the early 1980s, the public sector initiate a reform that is known as New Public Management (NPM). The NPM is important because it made that the public sector adopted management techniques from the private sector in order to improve the public service's efficiency and results (Young et al, 2012). The project portfolio management is one of the private sector techniques that were adopted by the public sector.

This study intends to deepen the literature review covering the project portfolio management in public sector contributing to this research field through a bibliometric approach using a wide search string in two of the most important academic studies databases (Scopus and ISI Web of Science). The objective of the current study is to elaborate an overview about the academic literature in this research field, identifying the main relevant aspects of project portfolio management in the public sector.

METHODOLOGY

The literature review is not based only in a single methodology, it can be done using different methodologies as bibliometric, content analysis and semantic analysis. Randolph (2009) exhibited the goal of a literature review as a way to understand the academic literature of a research area, the qualitative and quantitative data's extraction, the integration and generalization of the findings and the trend's analysis.

The decision upon which kind of literature review should be done are related to the literature data available, research area's maturity and the goal of the study. Chai and Xiao (2012) showed the bibliometric as a technique that uses a literature's quantitative analysis through statistics, social and natural sciences tools in order to make a citation, co-citation or keywords analysis. Chen et al (2010) presented the semantic analysis as a technique that summarizes and categorizes

terms and expressions to have a coherent interpretation of the research area's concepts. Finally, Tsai and Wen (2005) described the content analysis as a technique to explore the current status of the research area and is used when the research area is not well explored or when the researchers need to focus on a specific aspect of the research area.

For this study were used two databases: ISI Web of Science and Scopus. They were chosen because the first one is one database that contains relevant journals in academic community and Scopus has a good extent in academic journal's coverage (Falagas et al, 2008). In both databases were used the same search string: (((("project* manag*" and "portfolio*") or "project* portfolio*" or "portfolio of project*" or "portfolio management") AND ("public* sector*" or "public* manag*" or "public* polic*" or "public* organi*" or government*))). Were used the "*" symbols to embrace a bigger quantity of papers, allowing the search's results to reach correlate terms as plurals, gerunds, substantives and verbs. Additionally, were used two filters: (1) restrict search for "Articles", "Articles in Press" and "Review" and (b) restrict search for papers from 1980 (the beginning of the NPM) to 2015 (search's date).

With this search's parameters were obtained 115 papers in Scopus and 67 papers in ISI Web of Science. The results were checked to eliminate repeated papers in the databases and resulted in an initial sample of 140 papers due the removal of 42 repeated papers.

The abstracts of all the papers in the initial sample were read to use the lack of linkage between the papers abstract's theme and the project portfolio management in the public sector as exclusion criteria. With this new exclusion criterion, 105 papers were excluded. This high exclusion quantity is due to the semantic proximity of the study's research area and the financial investment's portfolio management's area. From the remaining 35 articles, were needed to exclude 2 articles written in a language that is not known by authors (Greek and Ukrainian) and another 2 articles that the authors couldn't have access to a copy. Thus, in the final papers' list remained 31 studies.

All the 31 papers were read to define the geographical focus, methodological approach and the project type analyzed in each study. Were also done a bibliometric analysis in the keywords, abstracts and the author's co-citation. The keywords analysis was performed with the use of the TagCrowd software to count the frequency of each keyword used and the abstracts and author's co-citation analysis were performed with the use of the VOSviewer software version 1.6.3 to measure the occurrence of words in the abstract (were used a minimum 4 times word frequency) and the authors' reference counting (were used a minimum 2 times co-citation frequency).

Data Analysis Results

The first analysis, exposed in figure 1, analyzes the year of the paper's publication. All the papers were published in a 30 years' period, from 1985 to 2015, been 90,3% of the papers published in the second half of this period. The papers were published in an extent of 26 journals, and the majority of the journals published only one paper. The exception were the journals "Construction Management and Economics", "Gestion y Politica Publica",

"International Journal of Project Management", "Journal of Information Systems and Technology Management" and "Research Technology Management" that had two papers published in each one.

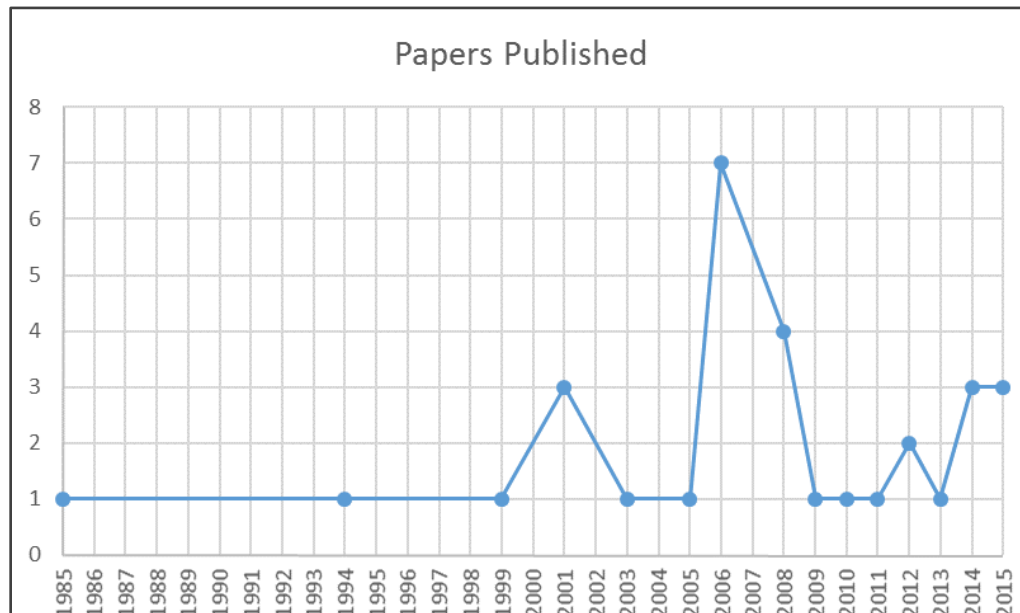


Figure 1 – Papers published per year

Were identified a total of 68 authors and, in the same manner as the journals, the majority had only one paper published, only two authors published more than one paper in project portfolio management in public sector research field. These authors were from 14 different countries. United States is the country with the biggest publication, with 8 papers, followed by Mexico (5 papers) and Denmark (3 papers).

The analysis made in the papers' content demonstrates some characteristics about the type and scope of the studies. Were found that 7 papers don't have a defined geographic focus of the public sector analyzed. Others 17 papers have a geographic focus in developed countries as United States, Denmark, Australia, Portugal, South Korea, Norway and United Kingdom. On the other hand, 7 papers have a geographic focus in developing countries as Brazil, Mexico, African Countries and Trinidad and Tobago.

Through a papers' methodology analysis, were found that 16 papers used a study case approach, 12 papers used a theoretical approach (with mathematical modeling or new frameworks development) and 3 papers used a survey research. Moreover, with a project type's analysis, were found that 10 papers focused on R&D projects, 6 papers approached infrastructure or construction projects, 4 papers studied IT project, 4 papers had other projects type focus and 7 papers didn't focus in any specific project's type.

The figure 2 displays the results of the keywords analysis, which shows that the most cited words in the papers' keywords, are "management", "project", "portfolio", "governance", "decision", "analysis" and "requirements".

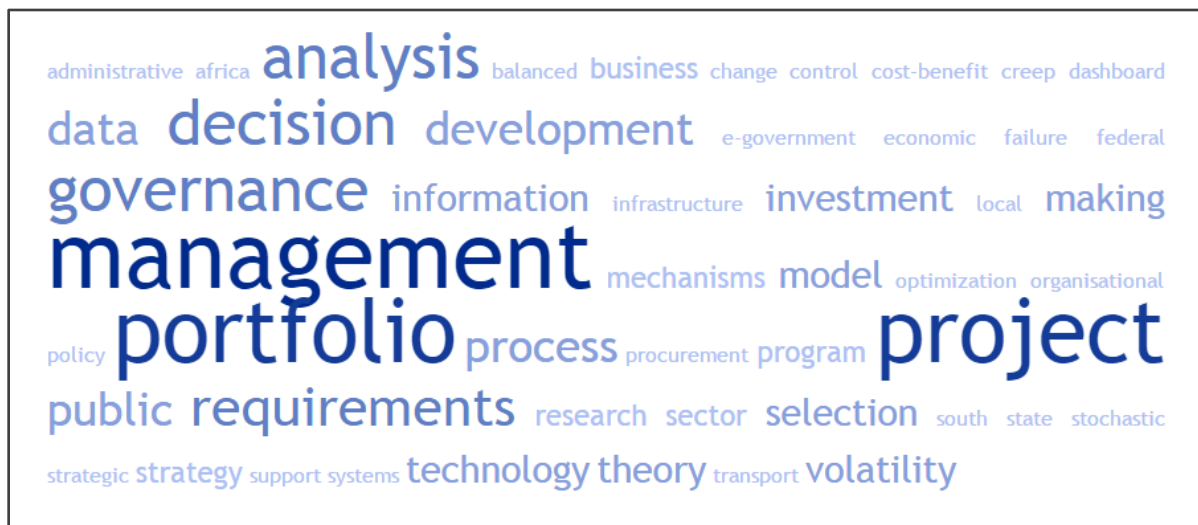


Figure 2 – Keywords' frequency

The abstracts' analysis is presented in figure 3, which exhibits that the most cited words in the papers' abstracts are grouped in three main clusters: one related to the public sector area, other related to the decision-making process and risk analysis, and the last one related to the portfolio management area and the studies methodologies.

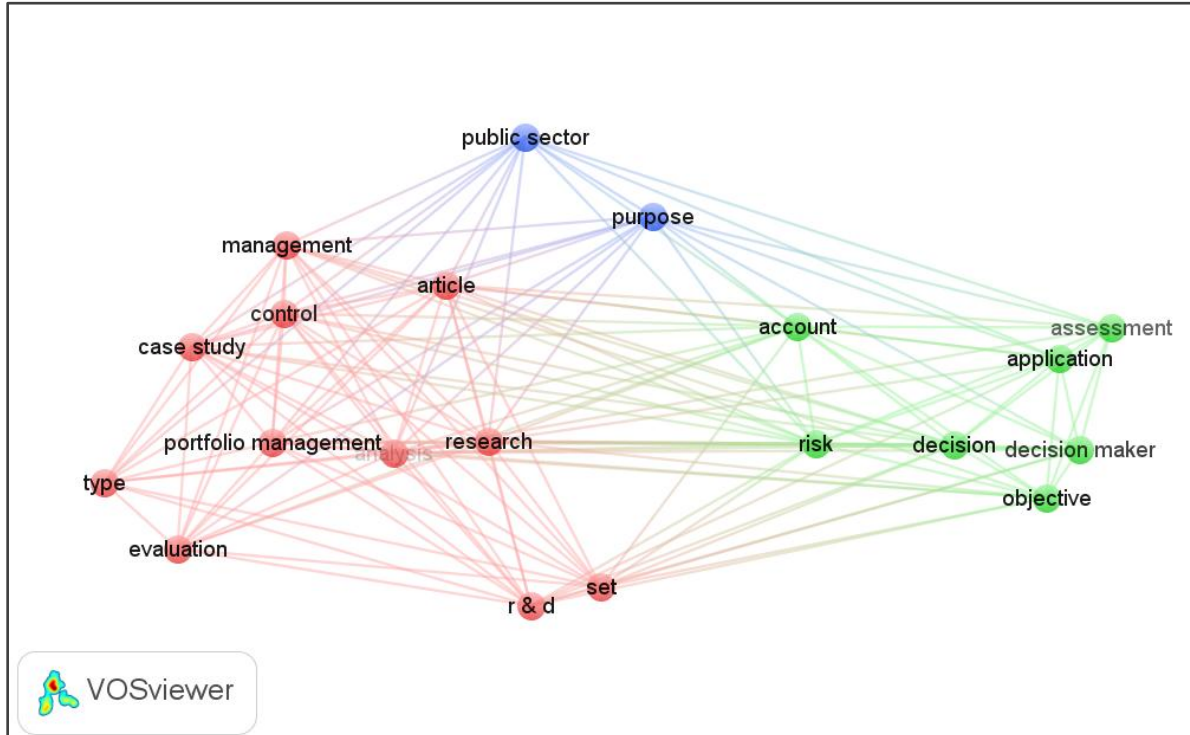


Figure 3 – Abstracts' word's citation's network

The density's analysis of author's co-citation presented in the figure 4 has three main clusters. The one with the biggest density are focused on Harry Max Markowitz and Richard A. Brealey, other cluster includes Simon French, Zdzislaw Pawlak, Thomas L. Saaty and Ralph L. Keeney, and the last one, focus on Howard Haiffa.

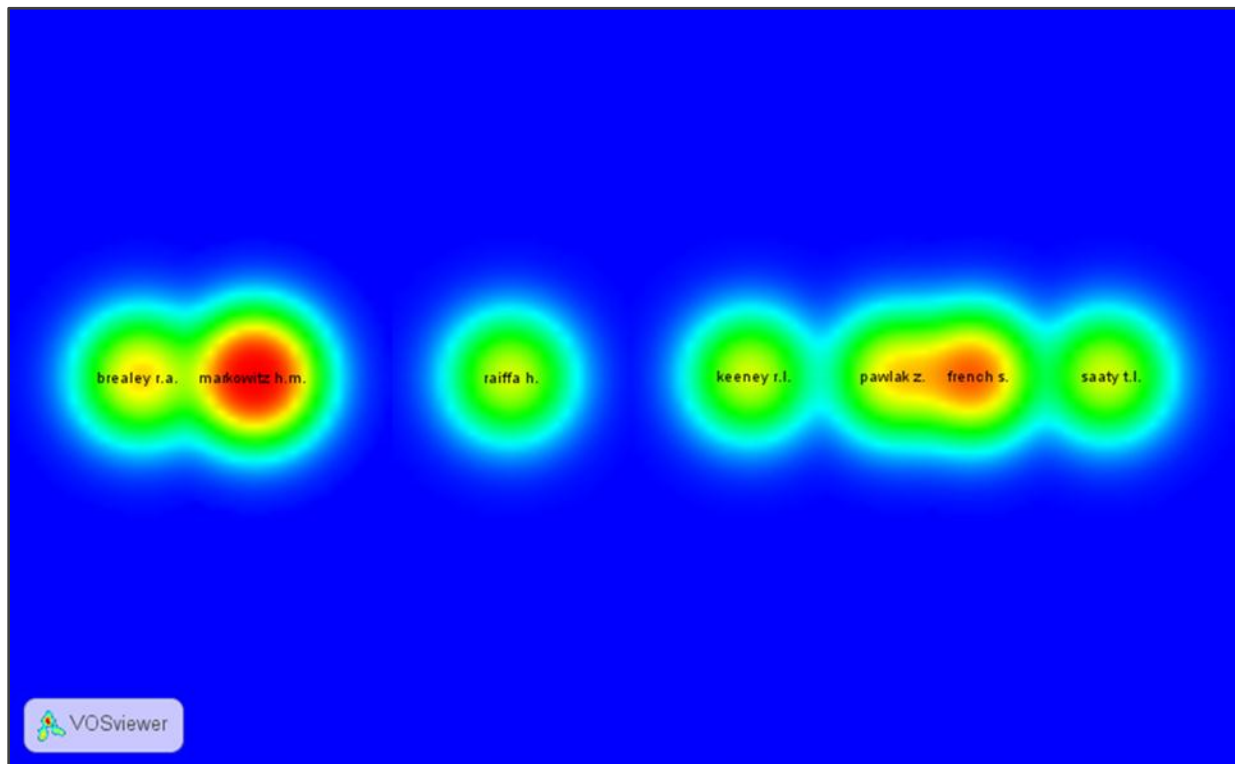


Figure 4 – Author's co-citation's density

DISCUSSION

Although the NPM begins in the early 1980s, the papers' publication distribution shows that the research area of project portfolio management in public sector has the majority of the studies made after 2000, but it does not appear to have any indication of a growing interest in this research area in the recent years. Notwithstanding, there is a peak in the academic publication in years 2006 and 2008. It is also important to note the large quantity of authors and journals were the papers were published and, in all papers, there are only two authors and only five journals that have published more than one study. The journals were from many different research's fields and, among them, could be highlighted the public sector and governmental research's field, with 6 journals, and the project management research's field, with 2 journals.

In the papers, the geographical focus is mainly in the developed countries, but there is no correlation between the geographical focus and the methodological approach used. The percentage of each methodological approach in the geographical focus is very similar between the developed or developing countries.

The analysis of the projects within the portfolio studied in each paper shows a majority focus on R&D projects. It could be explained by the R&D projects' portfolio's aspects, one of them is that the the R&D project's portfolio's has a need to maintain a balance between projects' quality and quantity (Litvinchev and López, 2008). However, there is diversity in the projects' type as agriculture projects (Mulder and Brent, 2006) and academic research projects (Maccari et al, 2015).

In the keywords' analysis, the most cited words are "management", "project" and "portfolio" that are easily explained by the literature review's focus. The word "governance" is well cited due to the important role of the governance in the introduction of the project management in public sector that are pointed by Hansen and Kræmmergaard (2013) and also in the effectiveness of the project management (Heindrickson and Santos, 2014). The governance also affects in the decision process that appears in the analysis in the word "decision". The relation between governance and decision are strong in the public sector due to existence of an administrative area that has a technical decision process and a political area that use their influence to modify the administrative area's decision (Fernandez et al, 2006; González, 2003; Nielsen and Pedersen, 2014; Odeck, 2010). Other well cited word is "requirements" that is related with the public sector contractual and legislation requirements that affects the portfolio management (Griffith, 2011; Kulk and Verhoef, 2008).

The abstract's analysis has three clusters. The first one are related with the public sector and its purpose, which differs from private sector due to its focus on the long term (González and Castillo, 2001), the need to consider financial, economic, social and political aspects together (Benjamin, 1985) because the financial data alone is not a good metric for the public sector (Bozeman and Rogers, 2001). The second cluster are the more generic, which involves the research's methodologies and the portfolio management's execution and control that are not done by the same area as the execution is done by the administrative area and the control by the political area (Pilkaite and Chmieliauskas, 2015) in order to have an unbiased control (Hansen and Kræmmergaard, 2013). The last cluster covers the decision and decision-making areas and also the risk management that is related with uncertainties (Ofiara and Psuty, 2001) and is done in public sector choosing to compose the portfolio high risk projects together with low risk projects (Cáñez and Garfias, 2006; Eilat et al, 2006).

The author's co-citation analysis also has three clusters. The first one has the Nobel award's winner Markowitz and Brealey, two researches well known in academic area for theirs studies in financial investments. The financial investment area is related with the portfolio management as some selection criteria, even in public sector are related with financial aspects. The second cluster has Saaty (the Analytic Hierarchy Process' creator), Keeney, French and Pawlak, all of them researches in the decision-making area, focusing in models to decision-making. The final cluster includes Raiffa, who is known by his work in the field of statistical and behavioral decision theory.

CONCLUSIONS

The project portfolio management in public sector evolves with the NPM and is one of the techniques that went from the private sector to the public sector. Although, this research area doesn't appear to have a notable growing trend in the academic studies, many authors and journals had the attention attracted for this research topic, demonstrating the breadth of the topic and its importance.

The literature covers developed and developing countries what demonstrate that the project's portfolio management are presented and could benefit public sector with different stages of development and managerial skills. Furthermore, the presence of many project's portfolio's types like R&D, infrastructure and IT projects brings the same idea of the great coverage that the portfolio management has in the public sector.

The results of the current study could elucidate the more important topics related with the research area. The decision-making's process, techniques and tools seem to be the most researched theme and had the portfolio management as a very close topic, what means that the decision-making and the governance are interdependent of each other and should be analyzed together in order to have a better whole process' understanding.

Another important topic is the portfolio's performance and success measurement. This is a difficult topic even in the private sector and, when analyzed in the public sector, brings even more complexity due to public sectors' objectives and stakeholders' variety and diversity. Two other important topics are linked with the portfolio's performance and success measurement: portfolio's risk management and control. The difference in portfolio's risk management from private sector to the public sector is the lower risk aversion in the public sector due to the project's longer term. Another divergence between the private and public sector in the portfolio management topic is related to the portfolio's control that in the public sector is higher because the politic sector has, additionally to the internal control, an external control in all its activities that is accomplished by the citizens.

In order to expand this study, the literature review analysis in project portfolio management in public sector can be enlarged with future researches that could be developed using different and more deepen literature review techniques like content analysis.

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