
Agile Portfolio Management in the context of development digital systems: A bibliometric and systematic review of the literature

Gestão de portfólio ágil no contexto do desenvolvimento de sistemas digitais: Uma revisão bibliométrica e sistemática da literatura

Roberto de Souza Góes

ORCID: <https://orcid.org/0000-0002-4806-3137>
Universidade Nove de Julho - UNINOVE, Brasil
E-mail: roberto.goes@gmail.com

Ivanir Costa

ORCID: <https://orcid.org/0000-0003-4890-8133>
Universidade Nove de Julho - UNINOVE, Brasil
E-mail: ivanirc@uni9.pro.br

Rolney Carlos Baptestone

ORCID: <https://orcid.org/0000-0003-0742-9080>
Universidade Nove de Julho - UNINOVE, Brasil
E-mail: rolney.caio@gmail.com

Wanderley da silva Junior

ORCID: <https://orcid.org/0000-0003-2268-7512>
Universidade Nove de Julho - UNINOVE, Brasil
E-mail: Wanderley.junior@uni9.pro.br

Marcos Antonio Gaspar

ORCID: <https://orcid.org/0000-0002-2422-2455>
Universidade Nove de Julho - UNINOVE, Brasil
E-mail: marcos.antonio@uni9.pro.br

Paulo Ribeiro Felisoni

ORCID: <https://orcid.org/0000-0002-9719-3800>
Universidade Nove de Julho - UNINOVE, Brasil
E-mail: felisoni@uni9.edu.br

RESUMO

O objetivo desta pesquisa é mapear, a partir da literatura, estudos que relatem como a gestão de portfólio ágil é aplicada nas empresas. O contexto deste estudo analisa como a concorrência e a volatilidade global afetam a gestão de portfólio de sistemas digitais. Os resultados alcançados indicam que os estudos sinalizam que a abordagem ágil é a que melhor adere a este contexto. Na revisão sistemática dos estudos selecionados somente 6 trabalhos apresentaram aderência ao objetivo proposto nesta pesquisa, evidenciando que o tema gestão de portfólio ágil é pouco explorado na literatura, pois não se encontrou nenhum artigo que cita os frameworks mais utilizados atualmente e/ou que demonstrem como estes são implementados. Espera-se que esse estudo contribua para pesquisadores da academia no estudo da gestão de portfólio ágil, pois existe uma escassez de trabalhos científicos abordando o impacto desse tipo de gestão nas organizações. Quanto à contribuição para o mercado, espera-se que profissionais possam se valer dos resultados desta pesquisa para tomar conhecimento de práticas adotadas por empresas sobre o tema e não fiquem restritos à indicação de empresas fornecedoras de soluções dessa natureza.

Palavras-chave: Gestão de Portfólio Ágil; Gestão de Portfólio de Projeto; Desenvolvimento de Sistemas Digitais; Agilidade de Negócios

ABSTRACT

The objective of this research is to map, based on the literature, studies that report on how agile portfolio management is applied in companies. The context of this study examines how global competition and volatility affect the management of digital systems portfolios. The results indicate that the studies suggest that the agile approach is the one that best fits this context. In the systematic review of the selected studies, only 6 works were found to be relevant to the research objective, highlighting that the topic of agile portfolio management is underexplored in the literature, as no articles were found that mention the most commonly used frameworks today and/or demonstrate how they are implemented. It is expected that this study will contribute to academic researchers studying agile portfolio management, as there is a scarcity of scientific works addressing the impact of this type of management on organizations. Regarding its contribution to the market, it is hoped that professionals can use the results of this research to become aware of practices adopted by companies on the subject, rather than being limited to the recommendation of companies that provide such solutions.

Keywords: Agile Portfolio Management; Project Portfolio Management; Digital Systems Development; Business agility

INTRODUCTION

The advancement of digital technology is increasingly present in people's daily lives, forcing companies to seek new management models for their processes and projects (KRAUS et al., 2018). The complexity of the market in which digital environments are inserted imposes frequent changes to meet customer demands. Adding this context to the high competitiveness between companies, efficiency and speed in the delivery of their projects is demanded by the market (JESSE, 2018; PLODER et al., 2022).

Given this scenario, agile methods stand out in the area of information technology (IT) in the software development process. The use of these methods is growing in almost 80% of companies in the market, which most of the time (52%) seek to accelerate the product development process (SCHWABER; SUTHERLAND, 2020). Despite the great adherence in the use of agile methods, this is not an isolated fact, since its application is also done in conjunction with traditional methods, in a complementary manner (PLODER et al., 2022).

Although the use of agile practices, derived from agile methods, has shown benefits, development projects in this approach are not treated as rigorously, according to the characteristics of long-term vision or requiring more robust planning as those carried out with traditional methods (THESING; FELDMANN; BURCHARDT, 2021). However, recent advances in digital technology require organizations to be transformed,

letting go of traditional processes that are slow and even put their very existence at risk in the long run (KRAUS et al., 2018; LAAMANEN et al., 2018).

When a company becomes agile in all its business processes, it is able to respond to frequent changes in the market, customer needs and the ability to innovate. This requires that not only some areas of the company are agile, but all areas and at all levels (HORLACH; SCHIRMER; DREWS, 2019; PAASIVAARA et al., 2018). However, in a survey conducted by the IDC (2022), only 37% of the companies evaluated have initiatives and, even so, isolated in some area of the company, usually focused on the IT area.

Transforming a large organization, outside the context of software development, is a complex matter, due to the need for major changes in internal culture. As a result, companies rely on specialized consultancies to do this type of work (FARRIS et al., 2006; MIDDLETON; JOYCE, 2012). A survey carried out in Brazil pointed out other factors that help understand the size of the challenge of carrying out such a transformation. The survey showed that only 34% of the professionals interviewed are clear about the topic and the benefits generated (IDC, 2022).

In a project-based organization, the success factors considered in projects do not necessarily take into account efficiency at the portfolio level and, with this, the competition for resources is notorious, whether financial resources, labor or equipment, thus affecting the company's competitiveness in the marketplace (ETGAR; COHEN, 2022; GUTIÉRREZ; MAGNUSSON, 2014; STETTINA; HÖRZ, 2015; TAVANA et al., 2015). In the same way that traditional project management is slow, traditional portfolio management models are too, as they involve centralized decision-making and problem management. That is, there is no delegation of these to the business areas to obtain the necessary support to meet market demands and changes, since they do not meet the volatility and the need for innovation that the market expects (BOUNCKEN; KRAUS; ROIG-TIERNO, 2021; LUNA et al., 2016).

New models, methods or frameworks such as SAFe (Scaled Agile Framework) and DaD (Disciplined Agile Delivery) bring solutions, but they are not adherent to all types of companies, which leaves gaps in planning and in the relationship between the technical area and the business area (HOFFMANN; MÜLLER; AHLEMANN, 2017; HORLACH et al., 2018; SUOMALAINEN; KUUSELA; TIHINEN, 2015).

In this context, there is a need to study the Agile Portfolio Management (APM) topic in organizations, using existing publications in digital scientific databases. To this end, the following question arises: are there studies that evaluate the use of APM in companies, in the context of digital systems development?

To answer this question, this research aims to map, from the literature, studies that report how agile portfolio management of projects is applied in companies.

THEORETICAL FRAMEWORK

The correct conducting of the projects that make up a portfolio involves both governance and management. However, for these processes to become agile in a company, behavioral factors, new work practices and the use of technology must be absorbed to achieve the goal of making the company agile as a whole (KETTUNEN; LAANTI, 2008; KRAUS et al., 2018; LAAMANEN et al., 2018).

Agile methods have a strong adherence to processes coming from the technology area, especially in software development processes (PETIT, 2022). Created in the mid-1990s, agile methods work in software development processes following a collaborative and iterative approach and have been gaining more and more space in companies (SCHWABER; SUTHERLAND, 2020; SCRUM INC., 2022). Given the complexity of the software development process, agile methods have addressed team management and the relationship with business areas, bringing them closer together throughout the process (EBERT; PAASIVAARA, 2017; SEBOLA; KHOZA, 2022). Derived from the Lean philosophy, which seeks to work continuously and make frequent deliveries, agile methods end up having a profound impact on the culture of organizations (MONTINI et al., 2020).

The use of agile methods in companies begins with behavioral change, as these methods do not adopt an exhaustive approach in creating a plan for subsequent execution of the plan created in a linear manner as proposed in traditional management models (ALBERS et al., 2020). In agile methods, planning is carried out in small cycles over a short period, with constant feedback and measurement of results (HODA; SALLEH; GRUNDY, 2018; SCHWABER; SUTHERLAND, 2020; PUTTA; PAASIVAARA; LASSENIUS, 2018; SUOMALAINEN; KUUSELA; TIHINEN, 2015). Given this characteristic, agile methods have a strong adherence to the absorption of changes and,

due to this, the projects that are executed in these molds are based on the delivery of value to the business or economic value generated (ALAHYARI; SVENSSON; GORSCHKEK, 2017).

There is a common consensus in the literature and among market experts that agile methods are insufficient to meet the needs of companies, which generates great discomfort with senior management, thus generating losses of business opportunities due to the lack of alignment with corporate leadership, especially in large and complex companies (LEFFINGWELL, 2011; STETTINA; HÖRZ, 2015; TKALICH; ULFSNES; MOE, 2022).

The concept of project portfolio management is not new, as its origins date back to the 1950s linked to the financial investment portfolio theory (DOLCI; MAÇADA, 2012). Portfolio management seeks to ensure the use of resources aligned with the corporate strategy in an efficient and effective manner in order to generate the best result, balancing the risks for the company (LUIZ et al., 2019).

Some portfolio types have different characteristics from each other, including not being coordinated with each other. In addition to these characteristics, digital systems development projects have another particularity, since they are innovation projects and, because of this, they depend on the creation and development of new knowledge throughout the project journey (OJIAKO et al., 2023).

As the use of agile methods in project teams advances, including in projects with multiple teams, and their maturity increases, it is natural that the path is to evolve to portfolio management (BATISTA et al., 2022; MCMAHON, 2005). However, at this level of management, new challenges arise, among them risk management, dependencies among teams and projects, which makes more complex the process of alignment and planning to maintain synergy among all involved (ABRANTES; FIGUEIREDO, 2014; KALLINEY, 2009).

Although portfolio management has a well-defined concept, the definition of projects is still unclear. The concept of beginning, middle and end with predetermined objectives loses its importance, since the initiatives are treated as a production belt with a continuous flow (HARVEY; AUBRY, 2018; PETIT, 2022).

Regarding the products of the development of digital systems, in the literature it is possible to find links between portfolio management and product management, given the fact that it is very easy to change their characteristics, even after launching

(ABRANTES; FIGUEIREDO, 2014; KALLINEY, 2009; RAUTIAINEN; VON SCHANTZ; VA, 2011).

In order to consider portfolio management as product management, combined with the difficulty of dealing with two conflicting approaches (agile and traditional), new frameworks have been proposed (KHOZA; MARNEWICK, 2023; LEFFINGWELL, 2011; SEBOLA; KHOZA, 2022; STETTINA; HÖRZ, 2015). Among these frameworks, the most used method in the market is SAFe - Scaled Agile Framework (SCRUM INC., 2022). This method is a set of processes and practices that scale agile to all levels of the company. Despite being a broad and complex structure, SAFe is not a prescriptive framework, i.e., it leaves it up to companies to choose which processes to implement (TURETKEN; STOJANOV; TRIENEKENS, 2017).

Another agile method that can be coupled with SAFe to complement it or be used on its own is Lean Kanban (ANDERSON; ROOCK, 2011; SCALED AGILE, 2023). The main feature of this method is to provide visibility of the entire backlog and the stage at which projects are located to facilitate queue management, highlighting priorities and avoiding bottlenecks. The purpose of this information is to identify constraints, which results in the constant flow of work and deliveries (AHMAD; MARKKULA; OIVO, 2013; ANDERSON; ROOCK, 2011; SCALED AGILE, 2023).

Table 1 summarizes the main concepts used in the theoretical framework with their respective authors, and in the construct “Agile Methods” the fundamental concepts of this approach and its frameworks are defined. The construct “Scaled Agile” addresses the matter of using agile methods in multiple teams. “Product Management” is argued by some scholars as a way to do portfolio management of development of digital systems projects. The portfolio management construct, on the other hand, supports the strategic and fundamental concepts of the theme, either in the traditional way or using the agile approach. In market research, it is research carried out by specialized companies that substantiates the use and application of methods and frameworks in the market. In the penultimate construct, there is the conceptualization of Business Agility, which is when the company as a whole takes advantage of the benefits of agile approaches. And finally, the Frameworks / Models construct where the frameworks mentioned are defined.

Table 1 - Summary of authors selected for each construct defined in the research

Constructo	Qtde Articles	Articles Selected
Agile Methods	8	Suomalainen <i>et al.</i> (2015); Alahyari <i>et al.</i> (2017); Hoda <i>et al.</i> (2018); Putta <i>et al.</i> (2018); Schwaber & Sutherland (2020); Montini <i>et al.</i> (2020); Albers <i>et al.</i> (2020); Petit (2022)
Scaled Agile	3	McMahon (2005); Ebert & Paasivaara (2017); Lesego Sebola & Lucas Khoza (2022)
Product Management	3	Kalliney (2009); Rautiainen <i>et al.</i> (2011); Abrantes & Figueiredo (2014)
Portfolio Management	3	Dolci & Maçada (2012); Luiz <i>et al.</i> (2019); Ojiako <i>et al.</i> (2023)
Agile Portfolio Management	12	McMahon (2005); Kalliney (2009); Leffingwell (2011); Anderson & Roock (2011); Stettina & Hörz (2015); Abrantes & Figueiredo (2014); Harvey & Aubry (2018); Petit (2022); Lesego Sebola & Lucas Khoza (2022); Tkalich <i>et al.</i> (2022); Batista <i>et al.</i> (2022); Scaled Agile (2023)
Market Studies	2	Scrum Inc. (2022), IDC (2022)
Business Agility	9	Kettunen & Laanti (2008); Kalliney (2009); Leffingwell (2011); Ahmad <i>et al.</i> (2013); Stettina & Hörz (2015); Kraus <i>et al.</i> (2018); Laamanen <i>et al.</i> (2018); Tkalich <i>et al.</i> (2022); Scaled Agile (2023)
Frameworks	3	Anderson & Roock (2011); Schwaber & Sutherland (2020); Scaled Agile (2023)

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It is interesting to note that the studies on the topic of portfolio management and Agile Portfolio Management of projects indicated in Table 1 reached 15 published articles, with 12 articles specifically on Agile Portfolio Management. These figures indicate that the topic of agile portfolio management covers the period from 2005 to 2023, making it clear how important it is for academia and the business market.

RESEARCH METHODOLOGY

The bibliometric review (presented in chapter 4) and systematic literature review (presented in chapter 5) are procedures that consist of collecting information in the digital databases of scientific works, carried out from search terms used in this research in the title, abstract and keywords (OLIVEIRA NETO *et al.*, 2018)

In order to identify the state of the art on the topic of APM, a systematic literature review (SLR) was applied to searches carried out in digital databases Web Of Science, Scopus and IEEE. The research is structured from the PRISMA method (Preferred Reporting Items for Systematic review and Meta-Analysis), which was performed in 4 steps: i) Identification; ii) Agglutination and Screening; iii) Eligibility and; iv) Adherence Classification and Detailed Analysis (BAKER; SCHORER, 2015; MOHER *et al.*, 2009;

PETERSEN et al., 2008). In addition to the PRISMA method, it was also applied the inclusion and exclusion criteria proposed by (LIAO et al., 2017).

The first stage of the SRL took place through the search for scientific papers in the digital databases with two distinct searches, whose results were combined as described in Table 2.

Table 2 - Search result in digital databases

Search	Criteria
Search 1 – Agile Portfolio	“Agile Portfolio Management” or “Lean Portfolio Management” or “Scaled Agile” or “Business Agility”
Search 2 – Product Management	“Product Management” or “Agile Product Management” and “Agile”

Font: Authors

The terms “Lean Portfolio Management”, “Scaled Agile” and “Business Agility” were inserted in the research due to their meaning being commonly used in frameworks, in addition to or replacing the term “Agile Portfolio Management” (SCALED AGILE, 2023). The terms “Product Management” and “Agile Product Management” were inserted since it is indicated in the literature that the IT project portfolio is treated as product management (DOLCI; MAÇADA, 2012). A filter was also added to the search so that only scientific articles were considered. The searches provided the result shown in Table 3.

Table 3 - Search result in digital databases

Database	Number of Works	Search Date
Scopus	183	09/05/2023
Web of Science	120	09/05/2023
IEEE	11	09/05/2023
Total	314	

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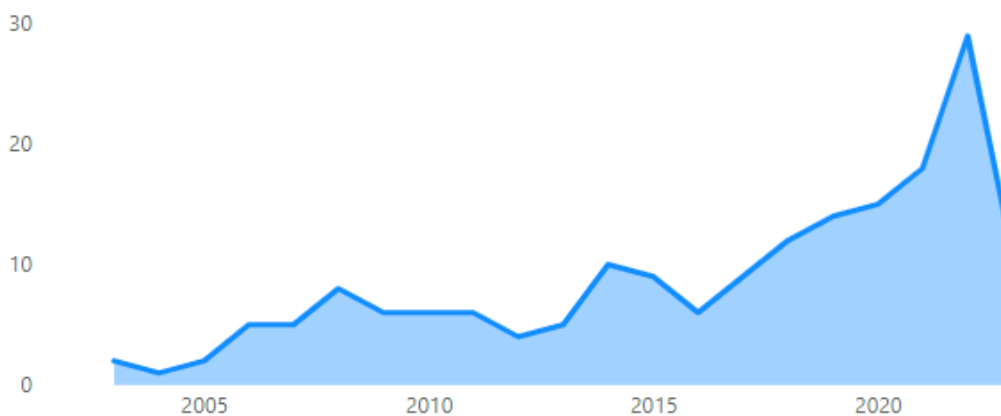
With this result, obtained in the searches in the digital bases, the bibliometric review/analysis presented in the next chapter was carried out. Although the search found 314 articles, many articles are registered simultaneously in more than one digital database

computing”. Note that the density in which these terms appear is represented by the size of the colored circles, according to the passing of the years from 2012 to 2022.

Another fact that can also be observed in Figure 1 is the sequence in the timeline of the evolution and intensity of research related to agile methods, highlighted in the orange color scale. Initially, around the second decade (2010-2019), studies focused on topics related exclusively to IT (highlighted in green and blue) and already at the end of this decade and beginning of the 2020s, there is a movement indicating the deepening of studies focused on "Business Agility", highlighted in red. Although the terms “Agile Portfolio Management” or “Portfolio” are not noticeable in the image, other words that refer to APM, such as “Scaled Agile”, “Strategy Agility” and “Organization Agility” are evident only from the beginning of the third decade 2020-2022, which is also highlighted in red.

This trend is also seen in Figure 2, which illustrates the strong increase in publications, with the exception of 2016 when there was a small drop. The year 2023 also shows a drop, but it should be considered that the survey only considered the first quarter of this year. A number of studies equal to or higher than 2022 is expected, considering that with only four months it has already reached approximately 40% of all publications of the last year (2022), thus indicating relevance of the theme of this study. Figure 2 illustrates the intensity of research over time from the 2000s onwards.

Figure 2 - Publications by year



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The bibliometric study also analyzed the origin of scientific publications. For this analysis, the authors' affiliation and contact information, shown in Picture 3, were verified.

Figure 3 - Publications by country



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In Picture 3, only the countries highlighted in white have no scientific study. The more intense colors show the number of publications on the topic of APM. With this, it is noticed that this is a theme that is addressed almost all over the world. However, the United States stands out for the large number of publications in studies originating in that country.

In Figure 4 the number of publications per language is shown.

Figure 4 – Original language of articles



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The objective of this analysis is to verify if there are studies published in a language other than English and that have relevance, considering that in the SRL these studies were excluded, as they did not meet the inclusion criteria. In view of this, the English language predominates in more than 95% of the published scientific research, as well as in 99% of the verified citations.

PRESENTATION OF THE RESULTS OF THE SYSTEMATIC LITERATURE REVIEW

The titles, abstracts, keywords, DOI and authors were extracted from the papers found in the searches carried out in the digital databases, as well as other useful information for subsequent analysis and systematic study. From this amount of information collected in the databases considered, the following inclusion and exclusion criteria were applied, as described in Table 4 considering Liao *et al.* (2017).

Table 4 - Inclusion and exclusion criteria

I/E	Cr�terios	Coment�rios
E	RST (On Reason for the Search Tool)	The article has only the title, abstract and keywords in English, but without the full text.
E	RST On Reason for the Search Tool)	Incomplete or inaccurate information in the title, abstract and/or keywords
E	NFT (No Full Text)	Full text inaccessible.
E	NR (Not Related)	The theme is not related to the study
I	LR (Loosely Related)	The theme is used as an example, future work, expressions or keywords
I	PR (Partially Related)	The theme is partially related to the study The theme is one of the topics of the study
I	TR (Fully Related)	The theme is explicitly related to the study

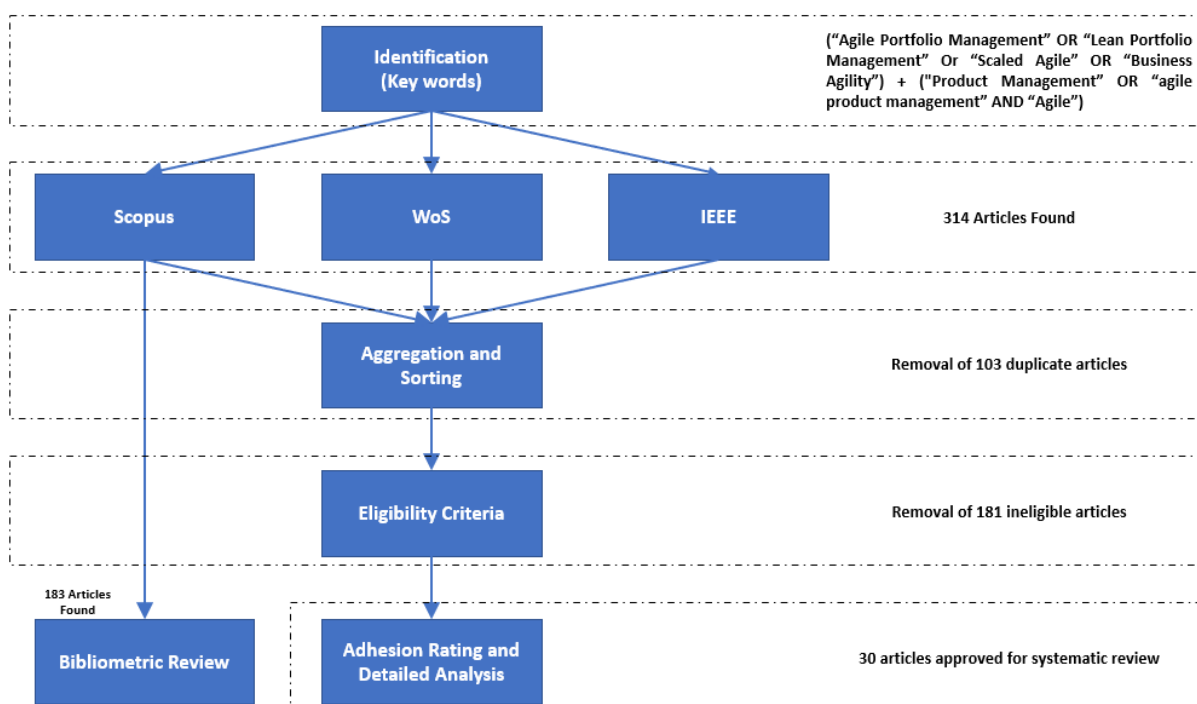
Font: Adapted from Liao *et al.* (2017)

The systematic mapping was carried out using the guidelines proposed by the PRISMA method, so that it was possible to obtain a holistic view of the state of the art. Another objective is to highlight gaps in approaches on the subject, where we sought to investigate how the APM was adopted in companies, what was necessary to change, which frameworks were used and what benefits were obtained (BAKER; SCHORER, 2015; LIAO *et al.*, 2017; MOHER *et al.*, 2009; PETERSEN *et al.*, 2008).

Initially, an objective analysis was carried out by reviewing the titles, abstracts and keywords of the articles found, thus seeking to verify adherence to the objective of this study through the criteria already indicated. As the adherence of the articles analyzed was identified, the works were highlighted to support this study. The search was carried out in May 2023 without restriction of publication dates, and only publications of the ‘article’ type were selected.

As mentioned in Table 3, records of articles published in the digital research databases were found and these were cataloged in a database of their own to carry out the systematic literature review. The results obtained can be seen in Figure 5, which also shows the partial quantities of articles at the end of each of the steps of the PRISMA method applied to achieve the desired result.

Figure 5 - Application of the PRISMA Method



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In the stage called ‘Agglutination and screening of information’, titles and DOI codes were analyzed to identify duplicate articles. At this stage 103 entries were excluded. The next step was the application of the ‘Eligibility criteria’ described in Table 4 considering not only the title and keywords, but also the abstract of the articles. At this stage, 181 articles were removed, resulting in 30 articles approved for more detailed analysis and discussion of the contents.

To understand the research objective of the 30 selected articles, 19 articles used the case study method and 4 systematic literature reviews were found. The remaining papers dealt with the creation of models or theories based on the literature.

The articles approved for the in-depth study were classified according to the researcher's adherence and criteria, the results of which are presented in Table 5.

Table 5 – Level of relationship of the articles considered for analysis

Level of Adherence	quantity
LR (Loosely Related)	7
PR (Partially Related)	17
TR (Fully Related)	6

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The following paragraphs describe the 6 studies classified as ‘TR - Totally Related’ to the scope of this study and which were chosen for the systematic content analysis of each of them.

The article “A conceptual framework for scaled agile success” presents the proposal of a conceptual model that determines the success factors in companies that use agile methods on a scaled basis. As the success factors are different at each level of the corporation and impact in different ways, the perception is also different. The study was based on quantitative research, in which the respondents were IT professionals and experts in scaled agile. This paper also identifies the need for studies to analyze the cross-relationships between the project, program and portfolio levels (KHOZA; MARNEWICK, 2023).

In the action research documented in the article “A conceptual framework of strategy, action and performance dimensions of organizational agility development” agility is defined as one of the key dimensions for organizational excellence, since it presents the aptitude to respond to the changes presented in the environment in which the company is involved. This study, however, does not specifically address APM but rather agility at an organizational scale (MESKENDAHL, 2010).

APM is addressed in the article “Agile portfolio management: An empirical perspective on the practice in use”. The article presents a multiple case study with 14 companies conducted in Europe in 2012 and published only in 2015. The aim of this study was to identify which practices are applied in portfolio, project and senior management. In this study, however, more up-to-date and robust frameworks such as SAFe or Lean Kanban are not addressed (STETTINA; HÖRZ, 2015). This study does not address the day-to-day routine, processes and artifacts used in the APM, and was only limited to identifying which methods were used.

Similarly, in the case study reported in the article "An empirical study of portfolio management and Kanban in agile and lean software companies", which was carried out in a conglomerate of companies providing exclusively IT services in Finland, it was investigated which were the tools and methods used in the companies and the adherence in the use of the Kanban method (AHMAD et al., 2017). This study also does not address the day-to-day routine, processes and artifacts used in the APM, and was only limited to identifying which methods were used.

Two systematic literature review (SLR) studies were found, namely:

- a) “Agile project and portfolio management: a systematic literature review”, which aimed to identify the practices used in the management of multiple projects of the same nature. This study indicated the existence of 28 articles until 2020, in which four dimensions of action to be considered in the APM were identified in the research carried out. The dimensions of coordination, prioritization of projects and resources, and agility are the best and most relevant practices to be implemented, while the dimension of change management provides the appropriate circumstances and conditions that must exist to manage an agile portfolio effectively (BATISTA et al., 2022);
- b) “Hybrid Project Management between Traditional Software Development Lifecycle and Agile Based Product Development for Future Sustainability”, which investigates whether traditional project management is sustainable when combined with agile methods in projects linked to digital transformation and how this contributes to product development. The focus has been on change management concerns, predictability of timeline and costs, with the aim of developing a hybrid strategy that will be more successful in the long term (LEONG et al., 2023).

DISCUSSION OF RESULTS

The following considerations set out the main facts and consolidated results observed in the selected literature through the bibliometric and systematic literature review established in this research.

Although the topic of APM is not a recent one, it is still not widely explored in the scientific literature. When looking at market research pointing to the growth in the use of methods that were created to address this issue and analyzing the volume of scientific studies, there was a great divergence in the number of articles. This conclusion is confirmed by the most recent systematic literature reviews found in this study, which indicate that there are few studies on the topic.

Despite having found case studies in which the APM theme was the focus of the research carried out, among quantitative and qualitative studies, no studies were found that detailed the difficulties or the process of change necessary for the transformation in

companies to adopt this model or even how was the adaptation to the simultaneous coexistence between traditional and agile models.

Another fact that deserves to be further analyzed is the question of the evolution of market models year by year, since new models emerge completing or redefining the way of working in an antagonistic way. Examples of this are the SAFe framework, which is a robust and complex structure, or even Lean Kanban, which in the case study carried out by the authors Stettina & Hörz (2015), were not even addressed.

Even in the most recent systematic literature reviews that were found in this study, it is suggested that there are few studies on the topic. The authors of these works do not deny the value that agile methods add to the digital systems development process and propose empirical studies to identify the practices applied in companies. Such future studies could be carried out through in-depth analysis of the processes implemented to find solutions to problems that cause projects to fail, as well as the risks inherent in the changes associated with using this approach (LEONG et al., 2023; PLODER et al., 2022).

FINAL REMARKS

This research has been limited to analyzing and only using already published scientific studies, as described in the research methodology chapter. However, studies were found outside this nature that were discarded from the analysis carried out in this research. This is because certain articles selected in this study were elaborated without proper scientific protocols, because they were from authors practicing the models or represented by consulting companies that have a commercial bias in their reports, as also described in systematic reviews by other authors. But, because they are in the market, together with large international companies, they may result in new studies, in order to support more subsidies to the theme addressed, which inexorably considers market practices as part of the research scope given the nature of the phenomenon.

Another limitation stems from the terms used in digital database searches. The APM theme is commonly treated in the models in use by the market with other nomenclatures, such as ‘business agility’, ‘product management’ and ‘scaled agile’. In this study we tried to map all of them, but given that there are multiple frameworks currently available, as well as the issue of adaptation in the use of these models by

companies, there may be terms that were not mapped and, consequently, did not enter the searches carried out.

In view of the results presented, future studies with field research are recommended, in which we seek to identify the process of transformation of pure or combined management models on the APM theme, also observing what changes were necessary in the company for its adoption, as well as the main challenges and limitations of current models. Future research could verify, for example, the financing structure, team composition, management structure and rites and artifacts practiced.

Due mainly to the speed at which models evolve in the market, cyclical studies should also be considered in order to revalidate models or to demonstrate their evolution when they are used by companies.

This research is expected to contribute to the academia in the study of the theme, as there is a scarcity of scientific papers addressing the impact of APM on large international and Brazilian organizations, since only six scientific papers were fully adherent to the theme of this research. As for the practical contribution to managers, professionals and companies, it is expected that project and program portfolio managers can access the results found in this research, in order to understand that there are other approaches on the subject, thus contributing so that they are not restricted to market solution providers.

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