Universidade do Minho
Escola de Engenharia

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Practices and Benefits of Innovation and Sustainability in Project Management within SMEs Context

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Master Thesis
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Work done under the guidance of
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Every challenge we face leads us to greater learning and evolution. This master's degree has elevated me in many ways, not only from the scientific and professional point of view, but also as a human being and student.

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

ABSTRACT

Practices and Benefits of Innovation and Sustainability in Project Management within SMEs Context

This research aims to identify practices that help to ensure sustainability and innovation through Project Management (PM) within Small and Medium-Sized Enterprises (SMEs). Although PM has been developed in the second half of the 20th century, project-based economic activity has increased, turning it into a vehicle for implementing sustainability and innovation.

A Systematic Literature Review (SLR) was conducted, considering articles in the main databases to understand: which are these practices, the evolution of this theme over the years, and the main related journals. In addition, it was also proposed to identify the benefits obtained by those who have made use of these types of practices. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) 2020 methodology was used to help select the articles with the greatest contributions among those identified in the databases.

In total, 86 sustainable practices, 166 innovative practices and 61 benefits were identified. The practices and benefits were segmented into categories according to the subject they are most related to. Thus, the sustainable practices were divided according to the three dimensions of the Triple Bottom Line (TBL); the innovative practices were divided into thirteen categories; the benefits were segmented into seven categories.

The most frequently mentioned sustainability-related practice was ‘Implementing waste management’; the most frequently mentioned innovation-related practice was 'Diffusing and sharing information, ideas and knowledge’. Concerning the benefits achieved, the categories with the highest number of benefits are those related to the organization and competitive advantage.

Finally, a bibliometric analysis was carried out taking into consideration the bibliometric data of the main articles related to this theme. With the support of the VOSviewer software, the main groups of themes and authors with the strongest network link in terms of authorship and citations were identified and analyzed.

KEYWORDS

Benefits; innovation; practices; project management; sustainability.

Resumo

Práticas e Benefícios da Inovação e Sustentabilidade na Gestão de Projetos no Contexto das PME

Esta pesquisa visa identificar práticas que ajudem a assegurar a sustentabilidade e a inovação através da gestão de projetos (PM) de pequenas e médias empresas (SMEs). Embora a gestão de projetos tenha sido desenvolvida na segunda metade do século XX, a atividade económica orientada para projetos está a aumentar, tornando-a um veículo para a implementação da sustentabilidade e da inovação.

Foi realizada uma revisão sistemática da literatura, considerando os artigos das principais bases de dados para compreender: quais são estas práticas, a evolução deste tema ao longo dos anos, e as principais revistas relacionadas. Além disso, foram também identificados benefícios obtidos por aqueles que fizeram uso deste tipo de práticas. A metodologia Principais Itens para Relatar Revisões Sistemáticas e Meta-análises (PRISMA) 2020 foi utilizada para ajudar a selecionar os artigos com maiores contribuições entre os identificados.

No total, foram identificadas 86 práticas sustentáveis, 166 práticas inovadoras e 61 benefícios. As práticas e benefícios foram segmentados em categorias de acordo com os assuntos com os quais estão mais relacionados. Assim, as práticas sustentáveis foram divididas de acordo com as três dimensões do "tripé da sustentabilidade" (TBL); as práticas inovadoras foram divididas em treze categorias; os benefícios foram segmentados em sete categorias.

A prática relacionada com a sustentabilidade mais frequentemente mencionada foi a gestão de resíduos; a prática relacionada com a inovação mais frequentemente mencionada foi a difusão e partilha de informação, ideias e conhecimentos. Quanto aos benefícios alcançados, as categorias com maior número de benefícios são as relacionadas com a organização e a vantagem competitiva.

Finalmente, foi realizada uma análise bibliométrica tendo em consideração os dados bibliométricos dos principais artigos relacionados com este tema. Com o auxílio do software VOSviewer, identificou-se e analisou-se os principais grupos de temas e autores com a mais fortes redes de ligação em termos de autoria e citações.

Palavras-Chave

Benefícios; inovação; práticas; gestão de projetos; sustentabilidade.

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Acronyms

EU – European Union

ICB – IPMA Competence Baseline

IMP – Innovation Management Practices

IPMA – Project Management Association

IT – Information Technology

OI – Open Innovation

P2M – Project and Program Management for Enterprise Innovation

PM – Project Management

PMBOK – Project Management Body of Knowledge

PMI – Project Management Institute

PMP – Project Management Practices

PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analysis

R&D – Research and Development

SD – Sustainable Development

SLR – Systematic Literature Review

SMEs – Small and Medium-Sized Enterprises

SPM – Sustainable Project Management

TBL – Triple Bottom Line

UN – United Nations

1 INTRODUCTION

This chapter contextualizes the theme of this thesis, providing a brief overview of the subjects that will be discussed and related during this research, explaining the reason for the importance of this research, both regarding the company managerial scenario and the world scenario concerning themes of global interest.

The motivation of the research is initiated by the economic and social importance of Small and Medium-Sized Enterprises (SMEs), linking this one to Sustainable Development (SD), Project Management (PM), sustainability and innovation (Section 1.1), followed by the research question that will be answered throughout this study, the objectives that are intended to be achieved and the expected results (Section 1.2), then, the research methodology used to reach what this work is proposed to achieve (Section 1.3). Finally, a summary of how this thesis will be organized by chapters is presented (Section 1.4).

1.1 Research motivation

SMEs are a very heterogeneous group in terms of size and sectorial diversity (Klewitz & Hansen, 2014) and have great importance in terms of social and economic health of economies (Ayyagari et al., 2007). They bring a crucial contribution to the economy in terms of employment, innovation and growth (Turner et al., 2010), presenting 99.8% of the non-financial economy in the European Union, and 67% of EU-27 employment capacity, being crucial for social and economic progress (Eurostat, 2020).

SD tend to be pointed out simultaneously by academia, society and business as the core agenda item of the 21st century (Ullah, Khan, et al., 2020). In 2015, the United Nations (UN) approved a program named "Transforming our world: the 2030 Agenda for Sustainable Development" and the main prerequisites and objectives of SD are: reduction of poverty, optimization of the production and consumption structures, careful use of the resources available and socio-economic development. Until 2030, the UN defined 17 SDGs to confront economic, social and environmental challenges, including the promotion of sustainable economic growth and innovation (Johnston, 2016).

SD could be defined as finding the present needs, without compromising the ability of future generations (World Commission on Environment and Development, 1987). It considers also the harmony between economic, social and environmental aspects of sustainability (Silvius & Schipper, 2014).

The 21st century demands not only larger effectiveness and productivity from the organizations' management side, but also implies that PM gives more importance to the sustainability subject and developing human skills (Lapiņa & Aramina, 2011).

PM can be considered crucial to the survival of SMEs Marcelino-Sádaba et al. (2014) and it is used to manage operations, deliver tailored or bespoke products, and manage innovation and growth. It can be a significant facilitating factor to SMEs contribution, but it is required a less complex form of management than those applied by traditional and larger organizations (Turner et al., 2010).

PM is a current discipline developed in the second half of the 20th century (Kerzner, 2017). According to Sabini et al. (2019), project-driven economic activity has increased, and for this reason, PM has become an important vehicle for the implementation of sustainability, focusing on minimizing resources, considering externalities and protecting human and natural resources.

According to Vrchota et al. (2020), PM spreads to all fields of human life, and the approach to problem-solving is in demand. Integrating sustainability into PM requires a scope shift regarding managing time, budget and quality, to deal with social, environmental and economic impacts (Silvius & Schipper, 2014).

How firms compete successfully in changing environments and competitive markets still contributing to SD is a remaining question, and a remarkable important way for organizations to do so are through sustainability-driven innovation practices (Schaltegger & Wagner, 2011).

Although the enterprises are beginning to agree with the significance of SD, they can be not sure of how the concept is applied to their activities (Tseng, 2013). There are some sustainable metrics that can be adopted in PM phases and procedures, independent of what is the object of the project (Sabini et al., 2019), but processes and practices could be different in each project on establishing PM (Olechowski et al., 2016).

Environmental sustainability and its correlation with product innovation are not new subjects, but the interest regarding these issues as essential topics for organizations has grown and are increasingly recognized (Nidumolu et al., 2009).

According to Mahajan and Peterson (1985), innovation could be an idea, object or practice recognized as new by the participants of a social system. Therefore, the incorporation of sustainability into management systems has been considered a process that contributes to innovation diffusion (Tsoutsos & Stamboulis, 2005).

Tools, techniques and processes will be studied to understand how innovative and sustainable practices integrate PM and which are the main benefits in using them.

1.2 Research question, objectives and expected results

The main question highlighted by this study is *How to strengthen sustainability and innovation in the organizational environment throughout project management* in small *and medium-sized enterprises*? Thus, achieving positive contributions for the organization, employees or people who are affected due to its economic activity, and also for the planet.

In addition, it is aimed to understand how the topics that compose this theme are related. Therefore, the objectives of this study are:

- Identify the sustainable and innovative practices that can be implemented into project management.
- Identify the benefits obtained by those who implement innovation and sustainability into project management.
- Develop a bibliometric study with the information available on the Scopus website that relates innovation, sustainability, sustainable development, project management and small and medium-sized enterprises, identifying the main metrics regarding this relationship.

Accomplishing what is proposed in this study, answering the research question and reaching the research objectives, the expected results for this work are:

- Measure the evolution of this theme over the years and the main related journals.
- Identify and divide into categories which are the sustainable practices that can be addressed to project management by SMEs in terms of environmental performance, social performance and economic performance.
- Identify and divide into categories which are the innovative practices that can be addressed to project management by SMEs.
- Characterize positive feedback related by those who implement innovation and sustainability practices into project management, perceiving the benefits that this adoption can bring in terms of competitive advantage, product and service, process, strategy, knowledge, organizations and employees.
- Notice some metrics, for example, main clusters of themes and authors with the strongest network link in terms of authorship and citations available on the Scopus database, that relates innovation, sustainability, sustainable development, project management, small and medium-sized enterprises, and others.

In summary, this research aims to provide greater knowledge to increase the ability of a small and medium-sized enterprise to be sustainable and innovative.

1.3 Research methodology

This research mainly aims to identify what are the sustainable and innovative practices that can be applied to PM within SMEs and to understand what are the main benefits of adopting these practices for those who have already applied them.

Intending to fill this knowledge gap, a systematic literature review will provide a critical assessment of the available knowledge about the sustainable and innovative practices applicable to PM and the achieved benefits related by those who implement these types of practices, according to the data collected in the Scopus and Web of Science databases, considering articles written in English, with no research date range.

Similar or related practices and benefits found in the literature will be divided and grouped into categories for ease of consultation and understanding.

The manner in which the topics that compose this theme are related will be analyzed through a bibliometric analysis, aiming to identify the relation between innovation, sustainability, sustainable development, project management and SMEs, being useful to analyze the trends and different topics in science research areas, noticing some metrics such as the main clusters of terms and authors with the strongest network link concerning occurrence, authorship and citations.

The data used for the bibliometric analysis will be extracted from the Scopus database and the worldwide used software for free bibliometric analysis VOSviewer (Visualization Of Similarities) was chosen to create co-authorship and co-citation of authors and co-occurrence of keywords analyses of the systematic networks.

1.4 Structure of the dissertation

The overall structure of this master thesis takes the form of five chapters.

Chapter 1 – Introduction begins with a brief overview and justification of the importance of the themes that will be discussed, points out the research question that will be answered, the objectives projected to be achieved, the results expected and the research methodology used to reach what this work is proposed to achieve.

Chapter 2 – Literature review presents the key theoretical concepts found in the literature concerning the two main subjects of this research, i.e. sustainability and innovation. Regarding sustainability, it is

addressed from a general approach to a more specific assessment inserted into PM and sustainable practices. Likewise with the innovation subject, being focused from the first concepts to its analysis of the PM and innovative practices point of view. Concepts and definitions related to SMEs are also taken into consideration, once they compose the scope of this research. At last, the topic of benefits with their main definitions and their achievement by those who have used sustainable and innovative practices.

Chapter 3 – Research methodology provides an understanding of how the SLR was developed in order to provide a critical assessment of the available knowledge on sustainable and innovative practices applicable to PM and the benefits achieved by those who have implemented them. The steps that compose this SLR procedure were described, such as the scope and research question definition, the search string formulation, the outputs returned by the chosen databases, and the PRISMA 2020 methodology applied to select the articles with the greatest contributions. It was also considered the steps to conduct the bibliometric analysis carried out considering the bibliometric data of the main articles and the use of VOSviewer software to provide a network analysis of the main groups of themes and authors with the strongest link in terms of authorship and citations.

Chapter 4 - Results and discussion aim to present the findings of this study, as well as their respective analysis and discussion. In this chapter, it was showed the main findings of the SLR, which culminated also in the presentation of tables that comprise the practices that can be inserted into PM in order to strengthen the sustainability and innovation in the environment in which they are applied, and the respective benefits achieved reported by those who made use of these practices, both practices and benefits were segmented into categories according to the subject they are most related to. In addition, the bibliometric analysis results showed the main groups of themes and authors with the strongest network link in terms of authorship and citations were identified and analyzed.

Chapter 5 – Conclusions draws together the main conclusions of the thesis, with a set of recommendations. This last chapter ends by highlighting possible future research pathways aiming at the continuation of the study regarding the insertion of the main aspects of sustainability and innovation into PM, as a manner of obtaining success and achieving sustainable development.

2 LITERATURE REVIEW

This chapter brings together the main concepts concerning the themes that will be addressed in this research, and details them based on the SLR findings and additional relevant literature. It has been divided into four sections inherent to the subject of this research, such as SMEs (Section 2.1), Sustainability (Section 2.2), Innovation (Section 2.3) and Benefits (Section 2.4). The subjects are listed from the most previous and comprehensive concepts, to the most specific and directed to the scope of this research.

2.1 Small and medium-sized enterprises

SMEs are considered a very heterogeneous group with businesses in the manufacturing, service, trade, and agri-business sectors, for example. Some of them are dynamic, innovative, and growth-oriented while others are small and family managed. They possess a wide range of sophistication and skills (Lukács, 2005) and have great importance in terms of social and economic health of economies (Ayyagari et al., 2007), once they bring a vital contribution to the economy in terms of employment, innovation and growth (Turner et al., 2010).

Definitions of SMEs focus mainly on the number of employees, revenue or both, the first being the most commonly used criterion. The thresholds are different in the United States, EU, China and other economies and countries. In China, it is considered SME until 2000 employees. In the United States, the upper limit of employees is 500, and the US National Center for the Middle Market describes midsized firms as those with revenues between US$ 10 million and 1 billion, dividing them into three subgroups (Zahoor et al., 2020).

European Commission (2015) defines SMEs in the EU as those with fewer than 250 employees and that do not exceed the annual turnover of 50 million or 43 million euros of the total annual balance sheet, as Figure 1 shows.

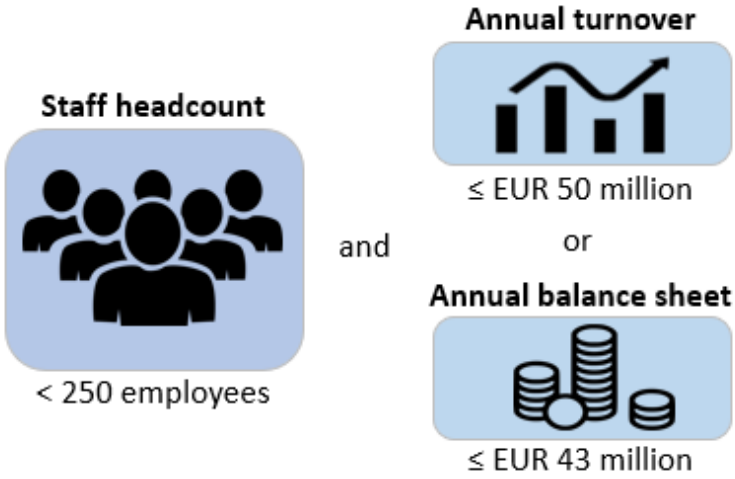

Figure 1 - SMEs definition in the UE

Furthermore, in the EU, SMEs can be defined as micro, small or medium-sized enterprises, according to the following criteria (European Commission, 2015):

- **Micro-enterprises**: employs fewer than 10 persons and annual turnover or annual balance sheet total does not exceed EUR 2 million.
- **Small enterprises**: employs fewer than 50 persons and annual turnover or annual balance sheet total does not exceed EUR 10 million.
- **Medium-sized**: employs fewer than 250 persons and have an annual turnover that does not exceed EUR 50 million, or an annual balance sheet that does not exceed EUR 3 million.

Considering the global context, in most OECD member countries, SMEs account for more than 95% of enterprises and generate more than half of private sector employment. In South Africa, the employment located in the micro, small and medium sectors is estimated at 60%. Asia, recognized as one of the best world's economies, is heavily based on small enterprises; in Japan, for example, over 80% of all employment is in SMEs. In Latin America, after courting multinationals for years, they have realized that SMEs are the real source of employment, in which approximately 80-90% of companies are micro-enterprises (Keskġn et al., 2010).

In the EU, 99.8% of the non-financial economy and more than 65% of the employment capacity are represented by SMEs, being crucial for social and economic progress (Eurostat, 2020). Portugal, for example, has an economy mainly composed of SMEs, 99.9% (PORDATA, 2021), accounting for 68.3% of the value added and 77.4% of employment, both are 10% higher than the respective EU average for SMEs (European Commission, 2020; Watanabe et al., 2021). Figure 2 confirms the numbers in terms of employment and quantities of SMEs mentioned previously, and adds a comparison with the value added

of large enterprises in millions of euros, being possible to infer that SMEs contribute with 53% of the value added in the EU (European Commission, 2021).

	Micro SMEs	Small SMEs	Medium-sized SMEs	All SMEs	Large enterprises	All enterprises
Enterprises						
Number	21,044,884	1,282,211	199,362	22,526,457	40,843	22,567,300
%	93.3%	5.7%	0.9%	99.8%	0.2%	100.0%
Value added						
Value in € million	1,179,476	1,071,196	1,087,613	3,338,286	2,956,544	6,294,829
%	18.7%	17.0%	17.3%	53.0%	47.0%	100.0%
Employment						
Number	36,988,539	25,313,006	20,130,548	82,432,093	44,358,284	126,790,377
%	29.2%	20.0%	15.9%	65.0%	35.0%	100.0%

Figure 2 - Number of enterprises, value added and employment in the EU-27 NFBS by enterprise size class in 2020 (European Commission, 2021)

2.2 Sustainability

Sustainability was initially related to nature. However, it was realized that it is not possible to consider only this dimension, once it involves other ones (Alves & Colombo, 2017), and can be inserted in several contexts, which will be referred in this research. For this reason, the definitions of sustainability in this section will be deepened from the most primitive concepts, in which the concern with sustainability and SD was originated, until their insertion within the contexts of enterprises, PM and sustainable practices.

2.2.1 Main sustainability and sustainable development concepts

Concerns regarding the Sustainability of natural resources exist since the 18th century, where the first preoccupations were with the number of trees and their capacity for renewal in sylvicultural, and the timber shortfall in mines, for example (Silvius et al., 2017). Currently, some factors that have influenced the management of production are challenges related to sustainability, for example the finiteness of important resources and global warming (Schrettle et al., 2014).

After these initial concerns, the book "Silent Spring" (Carson, 1962) criticized the use of pesticides and pollution and inspired the environmental movement. It became a mark of the modern preoccupations regarding sustainability and natural resource uses.

Another important book that considered sustainability concerns regarding the utilization of the natural resources and its consequences was "The Limits to Growth" (Meadows et al., 1972), simulating the exponential use of natural resources by the earth population and concluding that these resources capacity would not be enough over the years.

An important concept of sustainability and widely used is 'the triple bottom line'. It is considered as the balance between economic sustainability, social sustainability and environmental sustainability as shown in Figure 3. This concept was inserted by the book "Cannibals with Forks: the Triple Bottom Line of 21st Century Business" (Elkington, 1997).

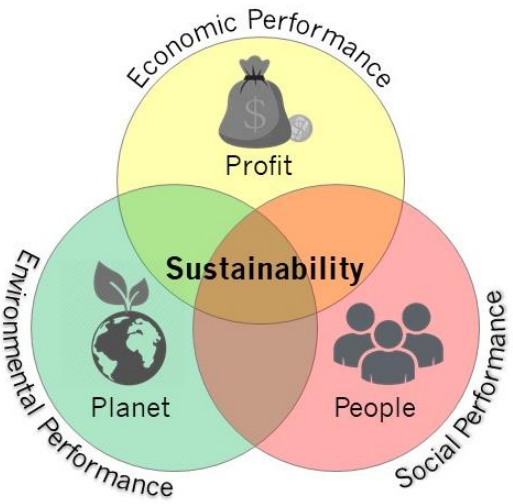

Figure 3 - Three dimensions of sustainability

Sustainability is increasingly becoming a powerful concept within both the industrial and business world (Shah et al., 2017). The social and cultural complexity we live in, considering the different situations, contexts and objectives, makes it necessary that sustainability works in multiple fields. This could be the reason why there is a lack of consensus about the sustainability concepts and dimensions (Maia et al., 2019).

Regarding the idea that sustainability involves different dimensions, Pappas (2012) inserted a perception that sustainability involves the five following dimensions: economic, environmental, individual, technological and sociocultural.

Furthermore, as can be seen in Figure 4, Colombo et al. (2017) extended the concept of sustainability relating it to eight dimensions, adding three more dimensions to which Pappas has defined: epistemological, relational and territorial.

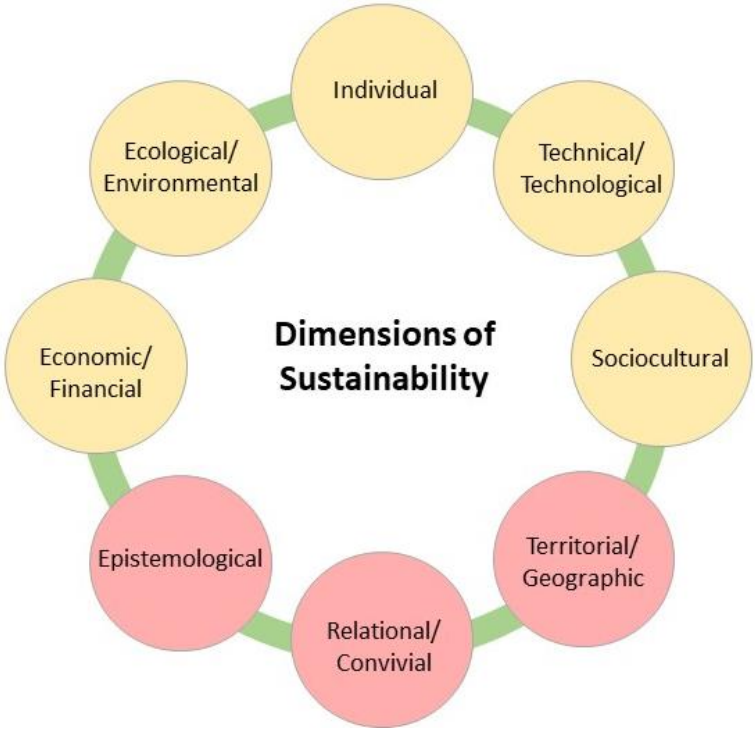

Figure 4 - Additional dimensions of sustainability

Sustainability and SD are considered common concepts. However, there are some differences between them (Alves & Colombo, 2017). The concept of sustainability has been discussed since the 1960s decade, but the concept of SD proposed by Brundtland in his book "Our Common Future" (1987) combined and integrated development with the environmental dimension of sustainability. SD was defined as the type of development that finds the present needs without compromising the capacity of future generations to attend to theirs as well (World Commission on Environment and Development, 1987).

2.2.2 Sustainability and sustainable development in enterprises

Previous concepts of sustainability and SD are focused on society in general. However, it is possible to study sustainability inserted in the context of organizations (Silvius et al., 2017), principally because it became a phenomenon, and SMEs are increasingly including the ideologies of sustainability into their governance, executing these changes with the help of PM (Vrchota et al., 2020) and an increasing number of companies are now assuming responsible strategies to assure to SD goals (Law & Gunasekaran, 2012), managing companies through an approach that considers the companies' economic, social and environmental dimensions (Chang et al., 2017).

The social area of sustainability deals with the impact of corporate operations on stakeholders, both internals and externals (Z. Liu et al., 2016), mainly being understood according to welfare, empathy for the groups where the project is being carried out and the uses related to the project. Welfare in this case considers the quality of human health and social life, access to basic facilities, employment, safe work, establishment of justice, education, training and others (Valdes-Vasquez & Klotz, 2013).

To the environmental dimension was given more attention than the other two (Goh & Rowlinson, 2015), and the efforts related to this area are focused mainly on reducing the use of non-renewable resources, encouraging the use of renewable materials and energy sources (Colangelo et al., 2018), controlling waste generation during the project lifecycle and avoiding environment destruction (Knöpfel & Taylor, 2010). Also, environmental awareness is a very important aspect within an organization for improving the implementation of environmental practice which decides, partly, the organization's SD performance (Sakr et al., 2010).

Economic sustainability is largely integrated to the other two dimensions (Goel et al., 2019) and has been introduced by all types of companies that aim to survive in a highly competitive market environment (Zhou & Lowe, 2003). The benefits for both clients, contractors and community are related to a better lifecycle value, better profits from operational efficiency, reduction of waste and, then, costs and the investment in human capacity building (Goel et al., 2019).

According to Ivanov et al. (2020), the implementation of SD in enterprises includes a set of principles and methods used in the long-term and operational planning into the development of indicators of business processes and functions.

According to Dow Jones (2009), the concept of 'corporate sustainability' can be defined as the approach in the business field that creates long-term value for shareholders by managing risks from economic, environmental and social development, and taking advantage of the opportunities. This concept came from the Dow Jones Sustainability Indexes that evaluate the sustainability performance of companies.

A definition more focused on organizational sustainable management was established by the International Institute for Sustainable Development, in the book "Business Strategy for Sustainable Development" (Deloitte & Touche, 1992), and says that sustainability is the adoption of business activities and strategies to meet stakeholders and enterprise's needs, while the human and natural resources that will be needed in the future are protected and enhanced. That is, the companies see sustainability as meeting its and direct or indirect stakeholder's needs without compromising the ability to meet future stakeholders' needs (Dyllick & Hockerts, 2002).

In addition to the concepts of sustainability in the context of organizations previously mentioned, the International Organization for Standardization (ISO) 26,000 inserts the subject of social responsibility defining it as the "responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behavior that: contributes to SD, including health and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behavior; is integrated throughout the organization and practiced in its relationships" (ISO 26000, 2010).

The concept of social responsibility can be taken further and the term corporate responsibility can be taken into consideration, pointing out how a company can be involved in the SD process, taking into account the balance between the company's self-interest and the greater public good (Dyllick & Hockerts, 2002). Vrchota et al. (2020) inferred that many researchers have considered the concepts from management position and the corporate social sustainability and the social orientation and attested that the leadership of these companies is more motivated and more favorable to realize changes when they have a clear and reasonable range of guiding principles such as relevant policies and sense of shared values.

Currently, businesses, particularly SMEs have started paying attention to sustainable pillars to promote continuous improvement and innovation, allowing the development of the economic, social and environmental organizational aspects. It is a key challenge for several companies, and sustainability strategy is an extremely important ally for the transformation of the business and the companies' prosperity (Shah et al., 2017).

2.2.3 Sustainability in project management

A project can be defined as a temporary effort undertaken to create a unique service, product or result, with time, cost and scope defined (Project Management Institute, 2013). Therefore, PM can be described as the application of the knowledge, skill, tools and techniques in the activities, during the project, to meet its requirements (Project Management Institute, 2013).

Many PM methods can benefit the administration and be applicable through the various aspect of the behavior and routine, but the adoption of new manners of managing projects, integrating the concept of sustainability has a global impact on many other aspects (Shah et al., 2017).

Sustainability viewed through the context of projects have gained attention because of the growing resource restrictions, the increased amount of stakeholders and the requirements regarding environmental, economic and social objectives (Martens & Carvalho, 2017).

Some researches have been carried out to examine the integration of sustainability into PM, and most methodologies would assist the organizations to incorporate sustainability in their PM and associate this as part of the project success (Grevelman & Kluiwstra, 2010).

The scientific field that integrates concepts of SD and PM began only in 2010 (Ivanov et al., 2020), which indicates that the bridge between these topics is still being built, and because of that, processes, tools and techniques are needed (Carvalho & Rabechini, 2017).

The themes regarding sustainability, SD and PM have been discussed amongst scholars as major topics (Stanitsas et al., 2021). The increasing importance of Sustainable Project Management (SPM) as a new school of thought in PM has started the interest of research studies regarding dealing with sustainability in projects, and a crucial focus can be observed on the construction industry (Keeys & Huemann, 2017) because it is the main source of air, water, and noise pollution (Fuertes et al., 2013). SPM integrate environmental, social and economic aspects at the same time the projects are managed (Silvius, 2017).

The current regulatory documents and associations regarding PM have been evaluated from the SD point of view, and it indicates that the corresponding aspect is poorly elaborated in the most known ones, i.e. Project Management Body of Knowledge (PMBOK) from Project Management Institute (PMI), IPMA Competence Baseline (ICB) from International Project Management Association (IPMA), Program Management for Enterprise Innovation (P2M), etc. (Ivanov et al., 2020). In addition, a recent review shows that the integration of sustainability on PM is, in most cases, interpretative, and the concepts of sustainability could be interpreted according to the context that the project is inserted (Zuo et al., 2012) being possible to infer that there is a gap related to the measurement of the sustainability on projects (Banihashemi et al., 2017).

Although the previously defined sustainability dimensions, Silvius et al. (2014) concluded that more dimensions or principles of sustainability could be important for the PM thematic, for example: balancing and harmonizing social, environmental and economic interests; short-term and long-term orientation; local and global orientation; values and ethics; transparency and accountability; stakeholders participation; risk reduction; eliminating waste; consuming income (Silvius et al., 2017).

The success of projects in the long term is associated with sustainability (Vrchota et al., 2020) and project managers should take into consideration sustainability as a success criterion in addition to the compliance of the iron triangle – scope, time and cost (Ebbesen & Hope, 2013). Based on the initial approach of

sustainability into PM of Silvius and Shcipper (2014), Silvius et al. (2017) described the broader social framework as the beginning of the recognition of the social dimension in PM. He also affirms that the traditional PM practices do not fulfil the basic principles of sustainability.

The linking between sustainability and PM is analyzed by Silvius and Schipper (2014), and it is understandable that if we have the notion that at the moment the use of natural resources is not sustainable, we must act through PM into corporate governance, by implementing desirable changes, reflecting in the strategic management of the companies and affecting its strategy.

After reviewing the relevant definitions of SPM, Stanitsas et al. (2021) inferred that four characteristics occur at the main goals of SPM. First is that SPM has effects in all dimensions of the TBL, not only in the economical. Second is that SPM should consider all the life cycle of the project and its outcomes. Third SPM should involve the analyses of stakeholders in order to achieve stakeholder involvement in its stakeholder-oriented management approach. Finally, SPM should help to assure the sustainability of the company and society.

From the four characteristics mentioned above, an advanced definition of SPM was defined as "the management of all the phases of a project through planning, monitoring and controlling during the entire life-cycle of the project's processes and deliverables, in order to fully comply with the stakeholders' demands, opting for transparency and ethics for the organization and society and assuring that economic, social and environmental dimensions are taken into consideration" (Stanitsas et al., 2021, p. 2).

In a broader context, Van den Brink (2009) considered SPM as a movement from project phases to support the subsequent generations, considering changes in the scope from project elements to the well-being of the global society.

Currently, the management of business projects is the main tool that contributes to the sustainable growth of organizations and its results contribute significantly to long-term organizational growth (N. Wang et al., 2017) and Marcelino-Sádaba et al. (2015) agreed that managing projects in a sustainable approach is the best strategy to reach the global goal of corporate sustainability.

After analyzing previous studies, Ivanov et al. (2020), stated that the integration of SD to PM is complex because there are contradictions between both systems as shown in Table1 above:

Table 1 - Contradictions between PM and SD
Adapted from Ivanov et al. (2020)

Contradiction	Project management	Sustainable development
Priorities	Main focus on project content, cost and duration	Concentrated on people, planet and profit
Major stakeholders	Interests of investors, contractors, suppliers and management are taken into consideration	It is required to meet the needs of both current and future habitants of the Earth
The focus of the objectives	Obtaining results	Product life cycle
Time horizon	Short-term goals	Long-term goals
The level of implementation	Focused only on the level at which the project is being implemented	It involves local, regional, national and global levels
Results for initiators and participants	Results are obtained at the end of the project	Results are achieved in the long term

2.2.4 Sustainable practices

Companies from diverse sectors search for changes due to global competitiveness and technology growth to find differentiation in their corresponding areas. Economic uncertainties enclose the business environment, making necessary the development of methodological practices to become innovative, sustainable and competitive (Severo et al., 2020).

Factors such as climate changes and damage of biodiversity have become a progressively more relevant topic, and the quantity of customers interested in these issues has grown (Dangelico & Vocalelli, 2017). Aligned with the fact that the production and consumption models have experienced substantial changes over the last decades (Smith & Offodile, 2016), the consequence is the increasing development of practices that intend to minimize impacts on the environment (Rossi et al., 2016).

The Association of Project Management (2006) considered that the earth has a range of fundamental sustainability threads, and considered that PM is placed to make contributions to SD.

World and business currently deal with pressures incentivizing the adoption of sustainable corporate practices for their long term existence and growth (Ullah, Waris, et al., 2020) and these practices are

gaining attention in the current business world, incorporating sustainable aspects into strategy and operations of industries which present a growing interest regarding the sustainable human existence (Withisuphakorn et al., 2019). Practices in combination with ideas, skills and available resources, i.e. tools, equipment and artefacts, are seen as the main elements of social responsibility (Nicolini, 2012).

According to Ekonomicznego We Wrocławiu and Rojek-Nowosielska (2015), usually, the sustainable practices in the corporate area are classified under social responsibility and use the TBL as reference. Sustainable practices can be related to the main cautions of SD such as waste and recycling, pollution, global climate change, corporate social responsibility, globalization, cultural dimensions and others (Whittington, 2006). Due to environmental issues becoming relevant sources of strategic change (Aragón-Correa et al., 2008), practices such as life cycle assessments, cleaner production, and ecodesign have become acceptable and recurrent in firms (Huber, 2008).

The concept of corporate sustainability has been approached by researchers in the organization management area (Marrewijk, 2003) and also the contribution of stakeholders in influencing sustainability practices (Sharma & Henriques, 2005). According to (Winter et al., 2006) the Project Management Practices (PMP) are related to the process and routine of an organization as a patch to obtain sustainable competitive advantages and Hodges (2005) agrees that a small change towards sustainable practices can positively influence the stakeholders' satisfactions level with the project and affect the global success of the project.

Sustainability is a vital part of PMP, maintaining the economic, environmental, and social, TBL, future benefits (Vrchota et al., 2020) and companies aim to achieve competitiveness through sustainable practices in other markets or existent innovations (Klewitz & Hansen, 2014).

Another recurrent practice mentioned sometimes in the literature is ecodesign. It seeks to project products by minimizing their environmental impact throughout the life cycle (Jabbour et al., 2018).

There are no uncertainties that the application of actions considered environmentally friendly implies major investment in training and equipment (S. L. Hart & Ahuja, 1996) once the companies need to be flexible, attempting to develop their staff and to provide better abilities to offer long-term sustainability, so they will be able to develop adaptive capacity (Afgan et al., 2009). However, according to Endrikat et al. (2014), it is not clear in the literature if these actions have a negative effect due to a high associate cost or a positive effect due to cost savings from optimization in resources and emission on company performance.

2.3 Innovation

This section starts presenting the main concepts of innovation and distinguishing it from the notions of invention and creativity. Subsequently, the definitions of open innovation and its advantages versus the traditional approach are presented. The next subsection deals with the theme of innovation within the context of SMEs, presenting their main challenges and advantages in this regard. After that, sustainability-oriented innovation shows how the combination of new perspectives can culminate in a more sustainable society. Then, the previously mentioned themes are addressed to PM subject. Finally, the topic of innovative practices is addressed, considering the SMEs' PM, that is part of the scope of this research.

2.3.1 Main innovation and innovativeness concepts

Innovation is a significant contributor to economic growth. It refers to the implementation of a new or a superior product, process, marketing or organizational method in workplace organization, practices or external relations. To go beyond a simple invention, an innovation needs to be successfully diffused in the market or implemented to achieve a positive impact on the economy, having a considerable level of novelty for the firm, market or world (OECD, 2005).

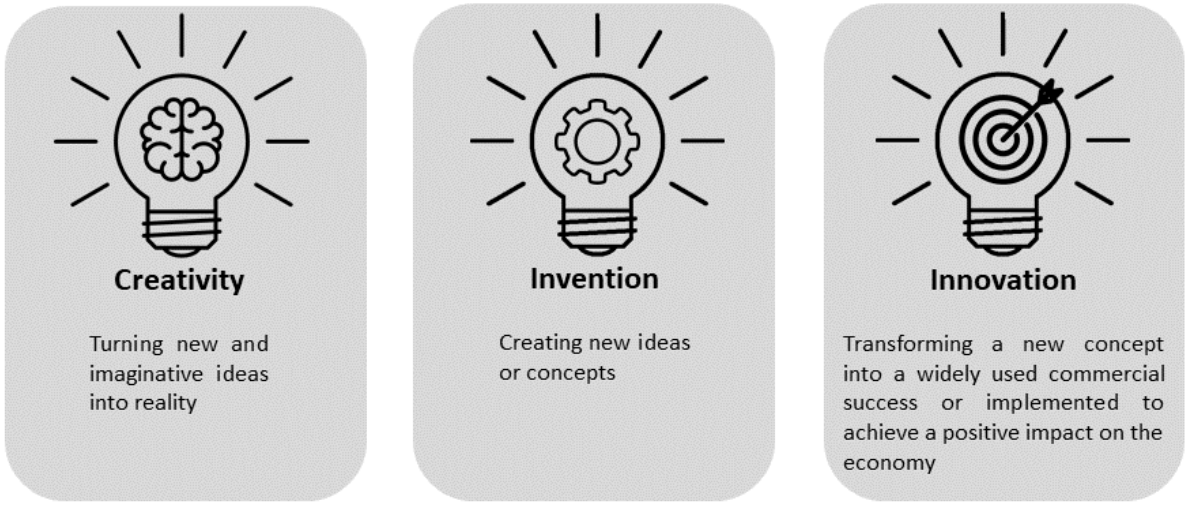

Figure 5 - Creativity, invention and innovation

In general, innovation also contributes to achieving a sustainable competitive advantage (Fazal et al., 2016), improving the firm's capabilities, becoming more adaptable and being able to learn and exploit new ideas (Maravelakis et al., 2006).

Despite innovation can be originated from new products, processes or management practices as previously mentioned, it can be considered a challenge toward achieving success on a project and bring economic results and benefits for society (Severo et al., 2017).

Innovativeness refers to novelty or originality level by introducing new ideas or innovations, depending on the ability to think and act autonomously, also referring to the ability to create something new or make modifications through a generation idea process (Hilmi et al., 2010). Innovativeness is the belief of the organizational culture that innovation is an important mechanism to reinforce its competitiveness power (De Brentani & Kleinschmidt, 2004) and can be considered one of the most important factors of profitability and survival of companies (Abbing, 2010).

Rubera and Kirca (2012) also define innovativeness as an indicator of the company's innovation output or a measurement of the innovation level of newness. Even though investigating innovations could be considered a powerful factor for economic growth in enterprises, innovation has been necessary for the expansion and industrialization of business (Paladino, 2007).

The capability of adaptation and change are elements that have fundamental importance for the organization survival and also for the progress of the society. Currently, the levels of market uncertainty are high and it contributes to its importance of adaptability (Santos-Vijande et al., 2021). The enterprises try to satisfy economic restrictions that occurred due to the competitive environment and stakeholders' pressure by applying innovation process (Moyano-Fuentes et al., 2018).

Innovativeness is related to a set of values that are favorable to the adaptation to risk, changes and efforts to develop new products and services (van Riel et al., 2013). For this reason, innovativeness endorses among the employers, including the top management awareness and comprehension of the critical protagonist of innovation to the long-term survival of the company (Rubera & Kirca, 2012).

2.3.2 Open innovation

The traditional approach to innovation, considered "closed", has become less sustainable than the "opened" due to strong competition and short time-to-market constraints (Kreowski et al., 2009). Open innovation (OI) is characterized by an open and purposeful collaboration that relates internal and external knowledge, going beyond the externalization of Research and Development (R&D) activities and combining traditional and different types of collaborations forms and partnerships that include: customers and suppliers, new crowdsourcing techniques and cross-industry innovations (Guertler & Sick, 2021), as

can be seen in Figure 6, which represents the paradigm between closed and open innovation present in Simic (2013) study.

Chesbrough (2003) describes a paradigm in the OI field, because the companies increasingly create ideas, knowledge and skills outside their boundaries, and use their capabilities to intentionally support external organizations and obtain benefits from this. It is critical the capacity of absorbing external knowledge to obtain benefits from others' know-how and increase the performance and ability of innovation of the organization (West & Bogers, 2014) but this capacity increases with the growing on R&D collaborations experience (Fosfuri & Tribó, 2008).

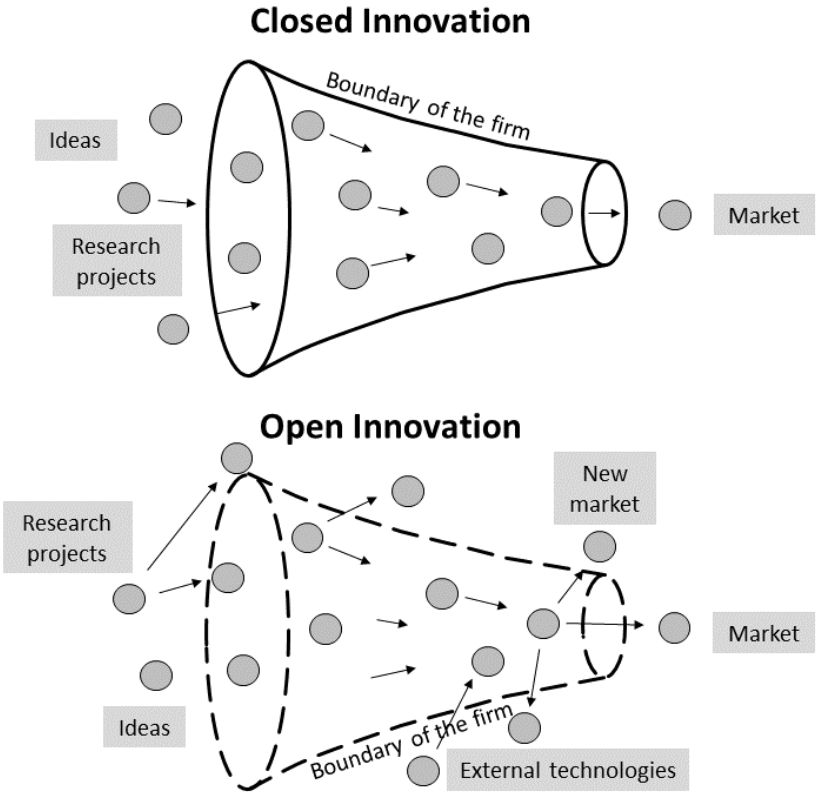

Figure 6 - Closed innovation versus open innovation

OI encourages innovation opportunities allowing access to external partners and knowledge. It has been recognized in academia and the corporative world, but the implementation in SMEs is still a challenge, especially concerning the identification of partners, and due to a limited and formal PM maturity and a lack of OI planning approach (Guertler & Sick, 2021).

2.3.3 Innovation and SMEs

While large organizations have enough conditions and resources, SMEs usually do not, and they need alternative strategies to increase their competitiveness in the global market (Žužek et al., 2020). Because of resources constraints, SMEs present a low risk appetite and enthusiasm to implement new approaches (Guertler & Sick, 2021) and have been relatively slow in adopting tools and techniques applied by large firms, even if they are concerned about the importance of innovation toward innovative performance improvement (Maravelakis et al., 2006).

Globalization, fast increases in technology, and the reduction of product lifecycle influence SMEs to become more innovative (Mannan et al., 2016), however, they are not able to manage innovation systemically, causing less definition and flawed in projects (Marcelino-Sádaba et al., 2016) and a lack of resources and knowledge are responsible for impeding their development (Marcelino-Sádaba et al., 2014).

Despite obstacles and restrictions, SMEs can also contribute with innovation; they are not only limited to a high number of employees, companies and financial capital raised (Mannan et al., 2016), they have less complex communication lines, relatively less formality related to decision making and are more flexible, acquiring advantages for faster innovation if compared to large enterprises (Maravelakis et al., 2006).

Innovation-based SMEs proactively try to find innovative solutions to social and environmental challenges to achieve competitive advantages (Aragón-Correa et al., 2008). In addition, the differentiation in considering environmental and social questions can go ahead to market success (Klewitz & Hansen, 2014).

Another relevant subject regarding innovation is related to its measurement. This approach can be used to enhance an SME innovative performance, by measuring innovation and establishing an innovation register. The most common measures of innovation activities can be designed through R&D investment, patent counts and amounts of major or minor innovations. The innovation survey also can be used as a tool to evaluate the innovative activities within a firm, assessing innovation and exploring their practices. Finally, benchmarking is a method for firms to compare their performance to other firms or an average, aiming better evaluate and understand a company's current practices to develop improvement actions (Maravelakis et al., 2006).

2.3.4 Sustainability-oriented innovation

The innovation sustainable approach has become more relevant with the growing focus on the TBL (Rocchi, 2005). To reach sustainable objectives such as environmental impacts reduction, a system innovation approach could give new perspectives, for example by focusing on combining product services, behavior changing and policy measurements, providing a more sustainable society (Jégou & Joore, 2004).

One of areas within innovation that can fulfill sustainable goals were addressed in Klewitz and Hansen (2014) study, pointing out that sustainability-oriented activities through innovation initially focus on eco-innovation. It represents improved or new processes, organizational forms and products or technologies beneficent to the environment reducing or avoiding undesired environmental impacts (OECD, 2005).

Klewitz and Hansen (2014) addressed three types of innovations, which are related to environmental dimensions: processes innovations, organizational innovations and product innovations.

Process innovations are regarded to the production of services and goods aiming the increasing eco-efficiency or metabolic consistency (Huber, 2008), for example, differentiating into end-of-pipe solutions and cleaner product technologies (Rennings et al., 2006), altering the use of resources and managing the non-product of business operation (Altham, 2007).

Organizational innovations can imply a new routine, structural reorganization and new manners of management within the organization, dealing with the work arrangement and people (OECD, 2005). Organizational innovation can further include more formalized management systems, such as environmental management systems (Rennings et al., 2006).

Finally, product innovations present some improvements in products and services or entirely new development. An example of product innovation is the ecodesign, bringing improvements through more eco-benign materials, less energy consumption, high durability and others. The entirely new products development can be addressed through new environmental or sustainable technologies (S. L. Hart & Milstein, 2003).

2.3.5 Innovation in project management

PM has a high potential to become an important organizational system if aligned with innovation and linked with areas as strategic management and tactics applied to achieve organizational objectives (Neverauskas & Railaitė, 2013). It is crucial for the success of an enterprise and to advance results with innovation (Guimarães et al., 2016).

The PM profession has exponentially grown and innovations for example information technologies are used to meet business requirements (Kendra & Taplin, 2004) and to assist the managers to control business functions, employees and other resources, which can be difficult to coordinate across several projects (Hobday, 2000). The examples of the industry sectors that adopted PM technologies to deal with scale growth, complexity and economic risks of capital projects were the construction and defense sector (Hussain & Wearne, 2005).

The appliance of PM for innovation and growth projects is wide, but it is not so consistent as its application in operations management. Almost inconsistently, a little number of organizations would use PM for managing operations, but not for managing innovation (Turner et al., 2010).

Wayne Gould (2012) points out that the adoption of PM inserted on OI projects is not yet completely explored. Due to this, many authors agree that more efforts are required in the OI research to explore the aspects that have to be developed, i.e. the PM skills and the stakeholder's coordination, that are one of the most important issues regarding the management of OI projects, in conjunct with the management of the involved stakeholders (Elmquist et al., 2009).

Traditional PM is centred on the closed–hard and standardized approach focused on cost, time and scope metrics, mainly aiming at outputs in terms of process management and not outcomes in terms of goal achievement (Atkinson, 1999).

Traditional PM maybe have lost the relevance for the management of innovation projects due to overemphasizing cost controlling over flexibility, neglecting the importance of sales, and not sufficiently supporting the flow of value aggregation (Jetter & Albar, 2015). In addition, it does not address the challenges and problems regarding complexity and interrelation of tasks and uncertainties management (Pons, 2008).

In contrast to conventional project management, systems thinking approach enables the contribution to the planning and controlling for innovativeness, complexity and uncertainty through the insertion of flexibility into managerial activities, corresponding to operational flexibility and boundary management (Kapsali, 2011).

Kapsali (2011) points out the application of conventional PM as leading to failure of innovation projects and defends the application of system thinking into the management of innovation projects, offering flexibility in planning, controlling activities and communicating, fostering more successful results.

Complementary to the above idea within the SMEs fields, the study of Turner et al. (2010) indicated that they need a light version of PM based on requirements management, providing support for requirements

delivered to customers, being simple to use and showing clearly the value to obtain the support of doubters.

2.3.6 Innovative practices

Pertuz and Pérez (2020) agreed that innovation is a fundamental strategy for an organization to meet success, and because of this, the companies use different practices to insert and manage innovation processes.

Innovation Management Practices (IMP) can be defined as structured technical or administrative help to effectively implement the innovation process. Their effectiveness can vary according to the industry, and a little group of practices can be universal, but the most are highly specified by the context. IMP characterize the systematization of the experience in management and innovation research, contributing to a potential improvement in the innovation performance (Tidd & Thuriaux-Alemán, 2016) and considering that PMP and process innovation can expand work quality and efficiency (Aga et al., 2016).

Furthermore, Tidd and Thuriaux-Alemán (2016) state that the professionals are aware of IMP, with lower rates of application, and its importance in other sectors of industry is not totally perceived. Also, there has been much more research regarding resources and capabilities needs for innovations than specific studies about processes and practices to support innovation.

Kapsali (2011) infers that there is a lack of PMP suitable for innovation projects and agrees that systems thinking, with its major flexibility in planning, controlling activities and communicating, can be appropriate to contribute to a better theoretical and practical development.

Several enterprises in different industry sectors have begun to agree with the idea that they can achieve benefits in applying PMP (Tereso et al., 2019) while respecting costs, time and performance; and for this propose, techniques, tools, practices skills, and the PM method are applied (Sá & Tereso, 2016). They need to identify the best strategy to create competitive advantages based on innovation, analysing the processes to better define the innovation path (Jayaram et al., 2014).

Gunduz and Alfar (2019) observed that the major reason to begin with innovation concept is the client requirement for improving the process or competitiveness in the market, but concluded that the most important input to motivate and start the use of innovative practices and the innovation process is the financial support and resources, characterizing the main obstacle on their adoption.

2.4 Benefits

Marnewick (2016) indicates that the success of some kind of project is not measured just based on the triple constraint, but that also on changing towards the achievement of the organizational benefits and objectives. Project Management Institute (2013) also refers in the PMBoK® Guide to benefits as a manner to quantify the success of the project itself. Benefit is defined by Bradley (2016) as a consequence of change itself recognized by the project's stakeholders as positive.

In the context of the SPM, the economic dimension is deeply entangled with social and environmental dimensions, and clients perceive the benefits for their investment through the better lifecycle value; and contractors enjoy the upgrade on their profits from operational efficiency, reduction in waste and, consequently, costs (Ullah, Waris, et al., 2020). The benefits related to the implementation and adoption of environmental sustainability were company image and increased stakeholders loyalty, providing competitive advantages for the future (Battilana & Dorado, 2010).

Gunduz and Alfar (2019) analyzed the factors around the innovation process and identified some benefits related to the organizational level, such as cost-saving, time-saving, quality improvement, technology improvement, safety improvement and market improvement.

The adoption of information technologies within PM specified some benefits, for example, cost and schedule performance improvement and positive perception by technology users, reinforcing the need to support new technologies towards management and technical perspective (Sargent et al., 2012). Economic results, management control and operating efficiency were also some benefits pointed out as benefits of introducing IT tolls in PM through the establishment of resource planning systems in the context of SMEs (Federici, 2009).

Only current studies have been starting to discourse the "human side" related to OI (Ahn et al., 2017). According to Locatelli et al. (2021), predominantly OI has been studied at the organizational level, and fair attention has been paid to the individual level, counting motivation, costs and benefits perceived by the people involved in the innovation process; and their study aimed to fulfil this gap focusing on the experiences of the people present in the university-industry projects, achieving multiple benefits, for instance: expansion of knowledge, capabilities, and achievement of new professional opportunities.

In addition, OI projects, with university-industry collaboration, not necessarily has coincident benefits, as new products or new patents, but in most circumstances, there are knowledge contribution and intermediate outcomes, that can be ideas for opening new research areas, or personal skills development, which can be used for future researches and projects (Locatelli et al., 2021).

2.5 Summary

In summary, the main findings of this literature review concerning SMEs are that they have great and growing importance in terms of social and economic health of economies, employment, added value, innovation and growth. In addition, SMEs have started to pay attention to sustainable pillars, including sustainability ideologies in their governance, implementing these changes with the support of PM to ensure SD objectives.

Regarding the sustainability subject, it was initially related to nature, but nowadays it can be linked to the elements of the TBL and others, such as individual, technological, epistemological, relational and territorial. It is increasingly becoming a powerful concept in both industrial and business scenarios. Also, the notions of social responsibility into the organizational context was inserted by ISO 26,000 in the year 2010.

It was perceived that the success of projects is linked to sustainability, and therefore research has been conducted to investigate the integration of sustainability into PM, considering it as a vehicle for its implementation and placed to make contributions to SD.

The environmental dimension was one of those that received more attention and amount of efforts, mainly related to reducing the use of non-renewable resources, encouraging the use of renewable materials and energy sources, controlling waste production and avoiding environmental destruction. Also practices such as life cycle assessments, cleaner production and ecodesign have become increasingly recurrent in companies, with considerable focus on ecodesign, and aim at designing products that minimize their environmental impact throughout their life cycle and it is also an example of sustainable-oriented innovation.

Despite the various benefits achieved by the introduction of sustainability in SMEs' PM, for some authors, it is still unclear if the investments considered in environmentally friendly actions have a negative effect due to a high associated cost, or positive effects due to the cost savings resulting from the optimization of resources and emissions in the company's performance, highlighting a knowledge gap regarding the cost-benefit assessment of this aspect.

It was also identified a gap in the literature regarding sustainable PMP within social enterprises and within industries other than the construction sector, once in this sector, the sustainable practices are well-established.

Regarding innovation, this can be considered a factor of economic growth in companies, necessary for the expansion and industrialization of business, with fundamental importance for the survival and progress of the society organization, considering the high level of uncertainty of the market and the

importance of adaptability. Nevertheless, it is believed that the main reason to start with innovation is the customer demand to improve the process or competitiveness in the market.

Great attention is given to OI by academia and business, characterized by the collaboration that links internal and external knowledge, exceeding the outsourcing of R&D activities and combining collaborations with customers and suppliers, new crowdsourcing techniques and cross-sectoral innovations. As result of OI, it was identified the expansion of knowledge, the realization of new professional opportunities, and other intermediate results such as the opening of new research areas, or development of personal skills to be used in future projects.

Another practice identified has been the adoption of information technology into PM, and similarly, the introduction of IT tolls for establishing resource planning systems in the context of SMEs, achieving economic results, management control and operational efficiency.

In this context of innovation, SMEs face some challenges: regarding OI, the challenges concern the identification of partners, the limited and formal PM maturity and a lack of OI planning approach; regarding the implementation of new approaches, it is related to resource constraints and financial support.

In contrast to the challenges faced by SMEs in the innovation scenario, they have some advantages that can contribute to faster innovation, such as the fact that they are not limited to a large number of employees, companies and raised financial capital, they have less complex and formal lines of communication, and decision-making and are more flexible.

PM has a high potential to become an important organizational system if it is aligned with innovation. Inconsistently, some organizations use PM to manage operations but not to manage innovation. However, an approach with high operational flexibility and boundary management is needed instead of a purely traditional PM focused on cost, time and scope.

Companies use different practices to add and manage innovation processes, but a lack of suitable PMP for innovation projects has been identified, and this is one of the objectives of this work: identifying in the literature which practices could help fill this gap of the range of suitable practices to ensure innovation in SMEs through PM.

3 RESEARCH METHODOLOGY

This research aims to identify which are the main sustainable and innovative practices that can be applied in PM of SMEs. In addition, it is also proposed to discover which are the main benefits of adopting these practices experienced for those who have already applied them.

Towards this identification, first, it is important to be aware what literature considers sustainable or innovative practices and benefits in the corporate and management field.

Sustainable practices incorporate sustainable aspects into strategy and operations, presenting a growing interest in sustainable human existence (Withisuphakorn et al., 2019). It is seen as the main elements of social responsibility if combined with ideas, skills and available resources (Nicolini, 2012), classified under the TBL (Ekonomicznego We Wrocławiu & Rojek-Nowosielska, 2015) and related to the main cautions of SD (Whittington, 2006).

Innovation practices can be defined as structured technical or administrative help to effectively implement the innovation process, and its effectiveness, varying according to the industry, characterizing the systematization of the experience in management and innovation research, contributing to a potential improvement in the innovation performance (Tidd & Thuriaux-Alemán, 2016) and considering they can expand work quality and efficiency (Aga et al., 2016).

Benefits are referred to as a manner to quantify the success of the project itself (Project Management Institute, 2013) and as a consequence of change itself recognized by the project's stakeholders as positive (Bradley, 2016).

Taking into consideration the intention of fulfilling this gap of knowledge, the research question *How to strengthen sustainability and innovation in the organizational environment throughout project management* in small *and medium-sized enterprises*? will be answered in the course of this research, as well as the following objectives:

- Identify the sustainable and innovative practices that can be implemented into project management.
- Identify the benefits obtained by those who implement innovation and sustainability into project management.
- Develop a bibliometric study with the information available on the Scopus website that relates innovation, sustainability, sustainable development, project management and small and medium-sized enterprises, identifying the main metrics regarding this relationship.

The first two objectives will be achieved through a SLR, providing a critical assessment of the available knowledge regarding sustainable and innovative practices applicable to PM and the achieved benefits related by those who implement these kinds of practices. Similar or related to the same group practices and benefits found in the literature will be divided and grouped into categories for ease of consultation and understanding.

The SLR will be conducted according to the data collected from Scopus and Web of Science databases, considering articles written in English, without a date range of search.

The third objective will be reached through a bibliometric analysis, aiming to identify the relation between innovation, sustainability, sustainable development, project management, SMEs or other relevant existing topic identified, being useful to analyze the evolution trends and different topics in science research areas, noticing some metrics such as the main groups of themes and authors with the strongest network link in terms of authorship and citations.

The data used for the bibliometric analysis will be extracted from the Scopus database because most of the articles found in the Web of Science have already been considered in the Scopus database.

3.1 Systematic literature review

A literature review summarizes and provides a critical assessment of the available knowledge regarding a specific subject (C. Hart, 1998). Petticrew and Roberts (2008) identified eight types of literature reviews: systematic, critical, narrative, conceptual, rapid, realistic, expert and state-of-the-art.

To offer a robust overview of the sustainable and innovative practices that can be applied to PM within SMEs, a SLR approach was realized. SLR is a research methodology used by many authors to explore their knowledge about a specific topic (da Silva et al., 2010) synthesizing results in an organized way, allowing a complete overview of the topics explored (Cooper, 1986).

The specific methodology SLR locates studies, evaluates its contribution, synthesize data and highlights conclusions (Denyer & Tranfield, 2009). It is a review with a clear stated purpose, a question, a defined search approach, starting inclusion and exclusion criteria, producing a qualitative appraisal of articles (Jesson et al., 2011) and being a technique of secondary study that is represented by a well-defined methodology to identify, analyze and interpret the evidences related to a specific research question (Nurdiani et al., 2016).

A SLR defines and uses criteria to identify, evaluate and resume the literature, listing the available studies published in peer-reviewed and grey literature, that is the not easily identifiable knowledge by the

traditional database (Rothstein & Hopewell, 2009). In addition, SLR aims to answer a defined research question and can test hypotheses and theories or create new theories with a less systematic error or bias (Petticrew & Roberts, 2008).

Mulrow (1994) emphasized nine uses of the SLR as per the scheme below:

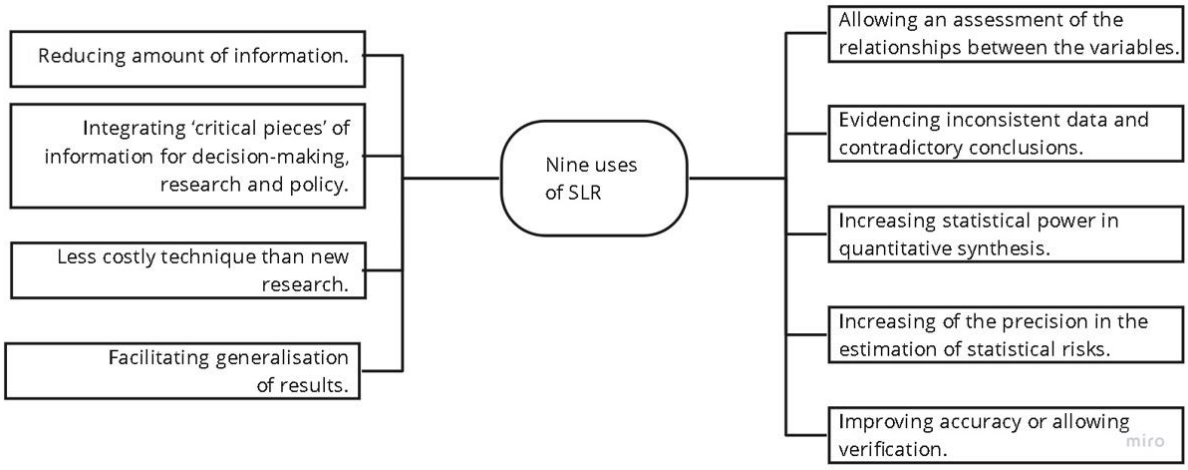

Figure 7 - Uses of the SLR

(Mulrow, 1994)

The methodology applied in this research to comply with the SLR consists of a procedure composed of four steps, respectively: scope and research question definition, keyword and search string, database output, and use of PRISMA 2020 as Figure 8 shows.

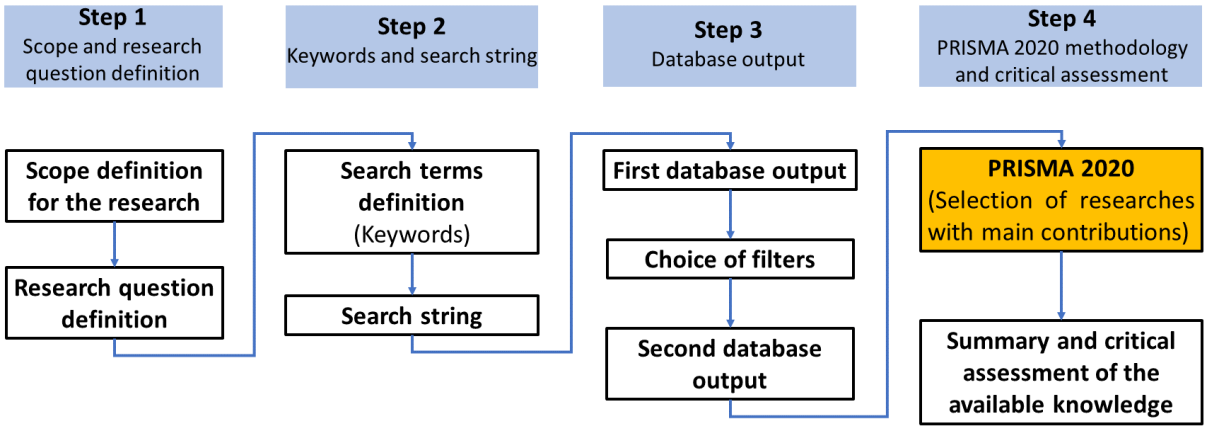

Figure 8 - Flowchart of the systematic literature review

The process began with the definition of the literature area to be studied. Once the scope of work is defined, the research questions should be formulated. These questions can be considered a success criterion to be answered for the screening process afterwards.

The definition of the search terms is the phase in which a keyword assembly construction aims to accommodate a broad range of search terms. This enables discovering how different terms have been co-cited in different papers. These keywords will also give rise to the search string making use of logical operators.

After the search string be inserted into the database, it will return some papers as the output of the search. Some filters that make sense to the research should be applied to refine the following outputs, such as type of paper, language, date range, country, and others.

In the last step, it was applied the PRISMA 2020 methodology, which facilitated the reporting of the added value studies taking into consideration the papers from database output until the researches related with the main contributions to this study. This methodology will be further detailed.

The studies selected after applying the flow diagram from PRISMA 2020 methodology compose the core content to summarize and make a critical evaluation of the available knowledge, giving possibilities to answer the research question based on the publications of two large and important databases, Scopus and Web of Science.

3.1.1 Scope and research question definition

As the main field of study of this research is PM in SMEs, the SLR developed was proposed to map and evaluate a potential research gap of knowledge. Hence, the research questions was defined to evaluate which are the main sustainable and innovative practices that can be adopted in the PM within SMEs context and which are the most frequently achieved benefit in adopting them.

The definition of the research questions helped do define which keywords would be necessary and the respective logic operator to specify the search string.

Based on the knowledge area this study is proposed to act, the research question and objectives, the subjects project management, innovation, sustainability, practices, benefits and SMEs, Figure 9 indicates the scope of this research is situated, that is in the intersection of these themes.

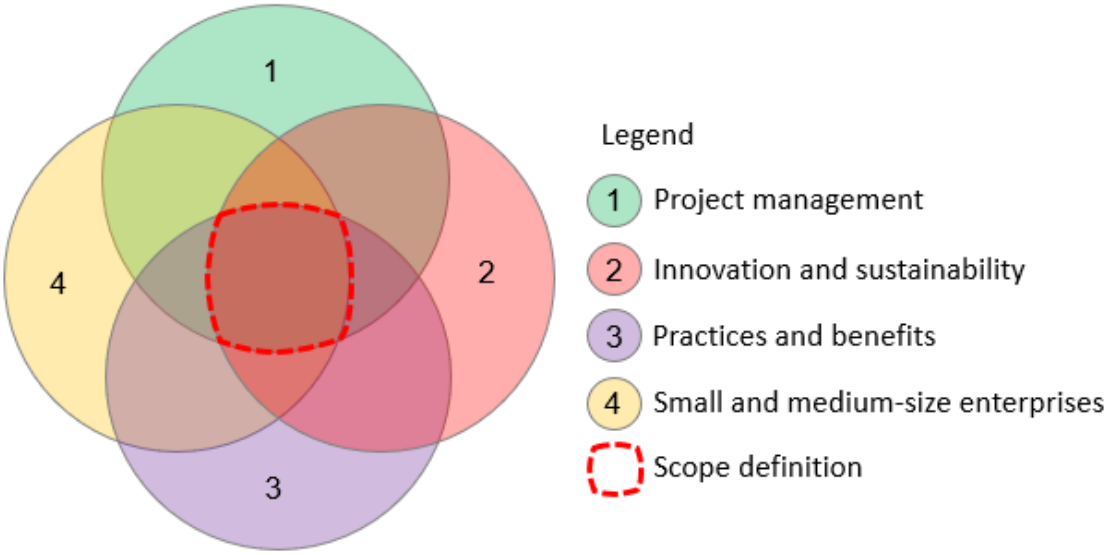

Figure 9 - Scope of research

3.1.2 Keywords and search string based on scope definition

The keywords definition in conjunction with the logical operators was another relevant step to define the search string of the research aiming to obtain the output of the database, that is, the data collection to be explored and related to the themes of this study.

As the main objective of this SLR is to identify the sustainable and innovative practices that can be applied within PM of SMEs and its benefits in adopting them, the string used in this study for abstract reading was: TITLE-ABS-KEY ("project management" AND ("innovat*" OR "sustainab*") AND ("practices" OR "benefit*")) AND ALL (("SME*" OR "Small and Medium* Enterprise*"))). The mentioned search string englobes the knowledge area presented in Figure 10 and follows the same logic of Figure 9, but in terms of keywords and logical operators.

It is important to clarify that the logical operators “OR” were used in the search string in ("innovat*" OR "sustainab*") and in ("practices" OR "benefit*") because it broad the database returned by the search, and the articles related to the keyword do not need to relate innovation and sustainability or practices and benefits at the same time, in the same article. Even the keyword themes are treated in articles separately, these articles are relevant to the research.

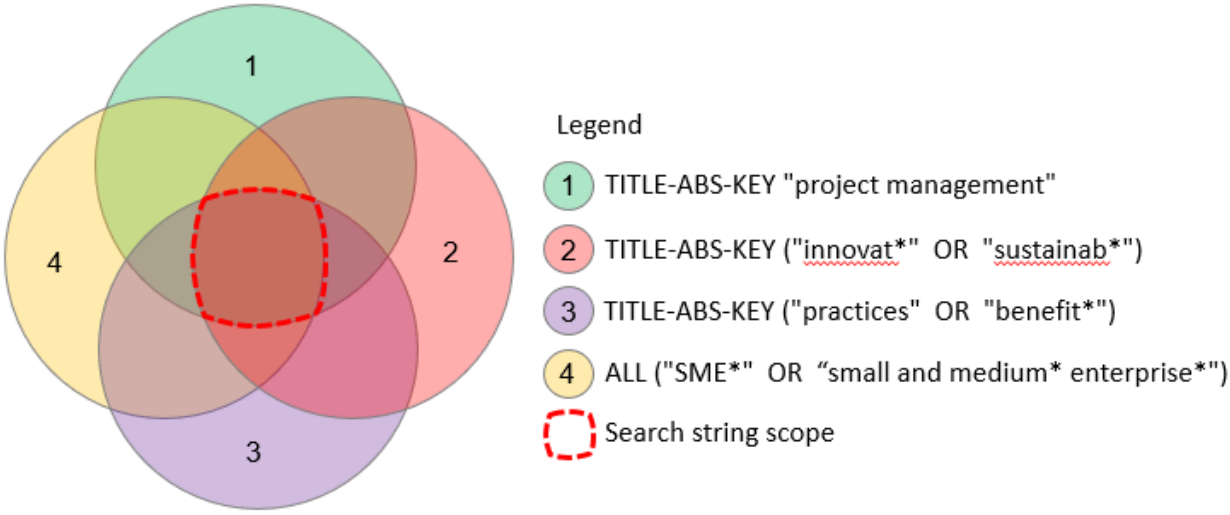

Figure 10 - Search string related to the scope

3.1.3 Database outputs

This step regards the keywords previously defined and the filters that should be applied to them. First, it was made a previous search on the Scopus and Web of Science database concerning the following string: ALL ("project management" AND ("innovat*" OR "sustainab*") AND ("practice*" OR "benefit*") AND ("SME*" OR "Small and Medium* Enterprise*")); and it returned an output of 9395 results, which is not a reasonable quantity of papers. Besides, due to the search had been carried out in all fields of the documents, all years, all languages and all kinds of papers, some additional filters were applied to obtain more specific data.

A second search was performed with the same keywords of the previous search, but considering the fields title, abstract and keyword of the papers, except for the keywords related to SME, which were considered in all fields of the documents: (TITLE-ABS-KEY ("project management" AND ("innovat*" OR "sustainab*") AND ("practice*" OR "benefit*")) AND ALL (("sme*" OR "small and medium* enterprise*"))). The result of the research totalized 319 initial records.

The reason why the keyword related to SMEs was considered in all fields of the papers is that the intersection of the previous terms with the keywords related to SMEs reduces drastically the number of papers available to a not relevant quantity. Due to SMEs relevance in the research scope as the main field of application, the advisors decided that this keyword could not be excluded from the search.

Some filters regarding document type and language were applied, restricting the search only to articles written in English: (TITLE-ABS-KEY ("project management" AND ("innovat*" OR "sustainab*") AND ("practice*" OR "benefit*")) AND ALL (("sme*" OR "small and medium* enterprise*"))) AND (

LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")). This was the sample space considered as a base and first sample for the SLR with 168 results.

The Scopus and Web of Science were chosen as the databases in this research because they cover over 20,000 peer-reviewed journals and 12,000 high impact journals, respectively, regarding fields of knowledge such as technology, medicine, science, social sciences, arts and humanities. The Scopus is managed by Elsevier publishing and presents details including access to tens of millions of peer-reviewed journals. The Scopus database could be also considered more extensive than the Web-of-Science database, that includes only ISI indexed journals. These databases contain the most reputable journals and for that reason, they were used for this study.

3.1.4 PRISMA 2020

The methodology Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was utilized as support to help select research related to the main contributions to this study as described in Moher et al. (2009). Over the years, some advances in systematic reviews were necessary, and the PRISMA 2020 replaces the 2009 methodology bringing some improvements in techniques to identify, select, evaluate and synthesize findings (Page et al., 2021).

The PRISMA 2020 Statement consists of a 27-item checklist, an extended checklist that details reporting suggestions for each item, the PRISMA 2020 abstract checklist, and a three-phase flow diagram that aims to help authors, editors, and peer reviewers of systematic reviews and other types of reviews to improve their reporting (Page et al., 2021). In this study, the three-phase flow chart will be used to systematically select and report the studies taken into consideration from the database collection until the reporting of the studies that bring added value to this research.

It is important to clarify that PRISMA 2020 is not intended to guide the systematic review or a quality assessment instrument to gauge the quality of a systematic review, PRISMA 2020 is useful to make sure that all proposed information is captured (Page et al., 2021).

The three steps of PRISMA 2020 methodology are respectively: identification, screening and included. The 2020 methodology improvement inserted 2 new columns to the 2009 methodology, respectively: previous studies and identification of new studies via databases and registers. In addition, PRISMA 2020 removed one step called eligibility and it was merged to the screening step. The PRISMA 2020 flow diagram is a result of adapting the studies of Boers (2018), Mayo-Wilson et al.(2018) and Stovold et al. (2014). The procedure can be understood by analyzing the flow illustrated in Figure 11.

Taking into consideration the records identified from both databases obtained through the string (TITLE-ABS-KEY ("project management" AND ("innovat*" OR "sustainab*") AND ("practice*" OR "benefit*")) AND ALL (("sme*" OR "small and medium* enterprise*"))) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")), it returned a sample of 168 articles. Following the PRISMA 2020 flow diagram, the next step was to verify if there are any repeated papers or some records that should be removed before the screening. It was excluded 14 records from the sample with 168 articles, 13 duplicated records and one record in disagreement with filters.

The next step was to add the number of articles to be screened, that is 154 records. From these 154 screened records, all abstracts from the Scopus and Web of Science databases were read, and those that did not seem to answer any research question were excluded. A total of 89 screened articles were excluded at this moment.

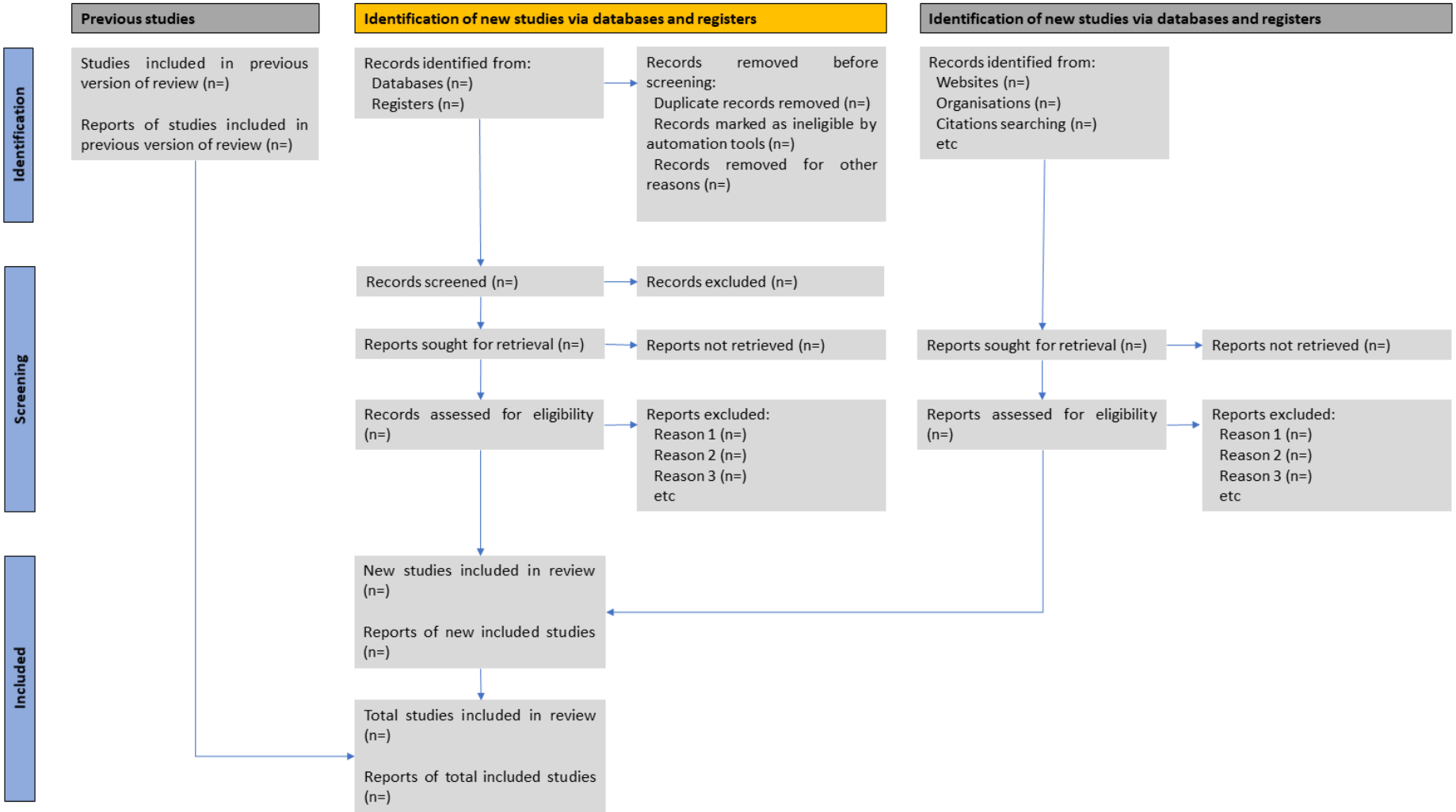

Figure 11 - PRISMA 2020 flow diagram
Result of adapting Boers (2018), Mayo-Wilson et al.(2018) and Stovold et al. (2014) studies.

For the next step, there were 65 reports sought for retrieval, but from this sample of 65, 5 reports were not retrieved, not being possible to access the full text. So, 60 articles were assessed to eligibility and had the full-text reading. From these 60 articles, 15 were excluded due to their no value-added after full-text reading.

It implies that from the sample of 168 articles obtained from the databases, 45 were not excluded in any step and brought contributions to the SLR, with sustainable or innovative practices that can be applied into PM, benefits related to adopting these practices, or some relevant concepts to compose this study. In addition, one article was identified from citations searching as very contributory to the theme and it was added to the studies included in the review, totalizing 46 studies with added value, how can be seen in Table 6 with the resume of all contributions of each article. In addition, the literature review chapter was mainly developed based on the finds of the studies with added value.

The application of the PRISMA 2020 flow diagram described above to this research approach can be observed in Figure 12.

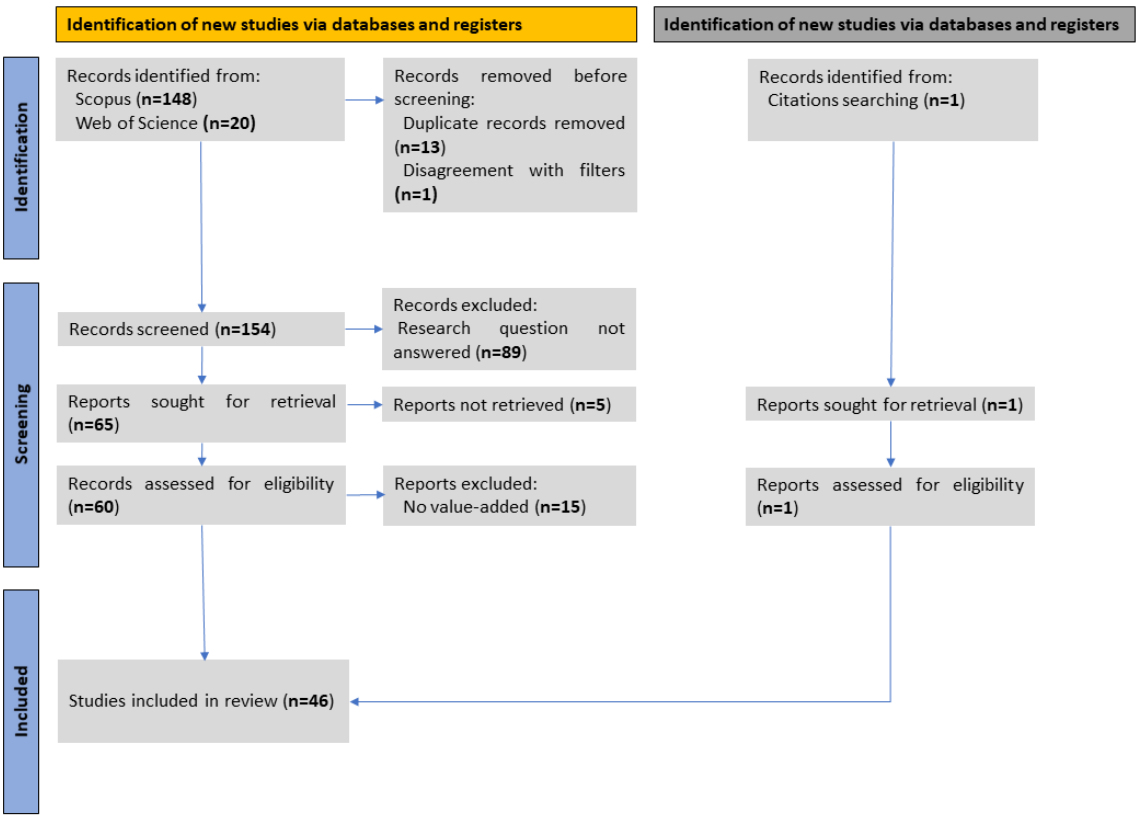

Figure 12 - Application of PRISMA 2020 flow diagram

3.2 Bibliometric Analysis

Bibliometric study and quantifications of co-citation and co-work networks can be a useful and strong technique to classify thematic areas, clusters of the research field and mains researchers, being helpful to visualize current and emerging themes (Zhao & Strotmann, 2015). It can be a tool to reinforce the SLR and exploration of knowledge on a given topic and will also be used in this research.

The bibliometric analysis presents a kind of systematic review with a bibliometric approach, developed through a database survey of already elaborated and published scientific papers. Bibliometrics investigates the formal properties of the knowledge field by using mathematical and statistical methods (Pritchard, 1969) and has been used to analyze the evolution trends and different topics in science research areas (Z. Qu et al., 2017).

An initial analysis regarding the sample demography of the 46 articles with added value identified in the SLR was conducted identifying the journal to which these papers are related and the total of publications per year, estimating the evolution of the research area.

Further analysis is based on a bibliometric analysis related to the subjects of the research questions previously defined and follows the flow steps of Figure 13. The data will be extracted from the Scopus database because the majority of the articles found on the Web of Science was already considered on Scopus, as per the 65 articles that passed on the step of the abstract reading according to PRISMA 2020 methodology, 60 was addressed on Scopus database. The most recent version of data was collected on October 7, 2021.

The worldwide used software for free bibliometric analysis VOSviewer (Visualization Of Similarities) was chosen to make co-authorship and co-citation of authors and co-occurrence of keywords analyses of the systematic networks.

The representation of a semantic network is indicated by nodes and edges. Nodes present objects such as co-occurrence of keywords or co-authorship, for example. Edges can exist between pairs of nodes as a connection or relationship. The distance between two nodes indicates the estimated relationship between the terms, and the relationship between the respective terms: the closer the distance indicates the higher the number of co-occurrences. The size of a label at a node determines the weight of a term within a network: the larger ones indicates the higher the frequency (Dos Santos et al., 2021; van Eck et al., 2010).

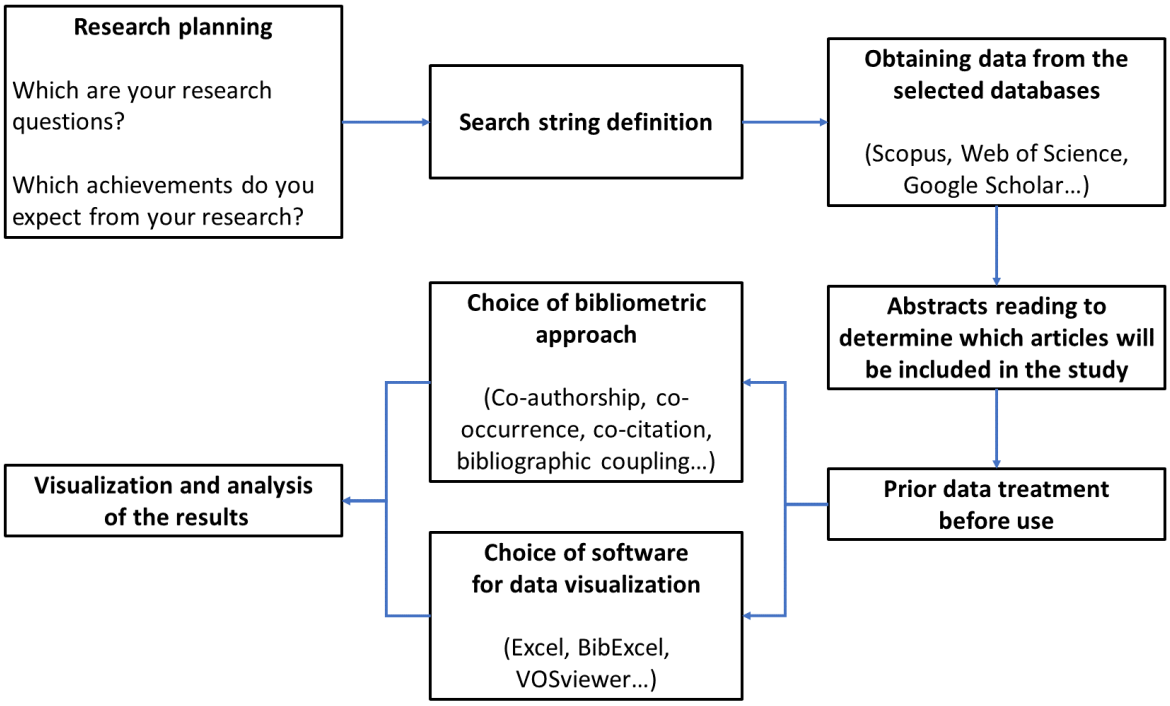

Figure 13 - Flowchart of the bibliometric analysis steps

A cluster is a group of items in a network. The link between two items represents a relationship and the average citations in which an item appears. Each color in the network represents a cluster, that is built based on a co-occurrence matrix in three steps: first, a similarity matrix is calculated based on the co-occurrence matrix; second, a map is created by applying the VOS mapping technique to the similarity matrix; third, the map is translated, rotated, and reflected (van Eck & Waltman, 2010).

The first analysis was regarding co-occurrence, and the network established was related to keywords, which recognized terms that occur concomitantly, and it was possible to identify some clusters of themes among the publications. As prior data treatment, similar terms were replaced (e.g., "SME" meaning "small and medium-size companies" or "CSR" meaning "corporate social responsibility") and repeated terms were excluded so that no false or untrue information was formulated in this network.

Before the creation of any network on VOSviewer, the data exported from the database must be verified. It means that the same precautions were taken into consideration to create the other network and the remaining results of the bibliometric analysis.

Further analyses were related to co-authorship, considering the authors most concerned with the theme and publications, and co-citation, revealing the level of similarity between the number of times the authors were cited together.

4 RESULTS AND DISCUSSION

This research started with the purpose of understanding how recent topics such as PM, SD, sustainability, innovation and others are related and can benefit each other.

Project-driven economy has increased, and PM has been seen as a vehicle for implementing sustainability (Sabini et al., 2019) and crucial for a business advancement towards innovation (Guimarães et al., 2016). Due to this, a SLR was conducted to find out which practices can be applied in PM to help SMEs to improve their sustainable and innovative capacity.

Besides the practices above identified in the literature, collecting the benefits reported by those who applied these practices is a manner to identify the positive contributions of these actions. For this reason, the SLR review also included these reported benefits.

The papers considered as the core of the SLR were the articles written in English addressed on Scopus and Web of Science databases taken into consideration the search string and the exclusion criteria and flowcharts presented in the methodology chapter.

Although PM is a growing topic of research in the last years, no SLR was found relating to the exact themes that this research is proposed to study. However, the following reviews with some subjects related to this theme were found within the output of the database and were taken into consideration to strengthen this study.

Pertuz and Pérez (2020), studied IMP and developed a systematic review regarding innovative practices for future research in SMEs; Brones and Monteiro De Carvalho (2015) developed a SLR to realize the state of the scientific art on ecodesign; Banihashemi et al. (2017) found critical success factors for the integration of sustainability into PM practices of construction projects through a literature review; Klewitz and Hansen (2014) answered which practices of sustainability-oriented product, process, and organizational innovations occur within SMEs; and Paula Pinheiro et al. (2018) integrated ecodesign practices, methods, and tools with portfolio management during the planning stage according to a systematic analysis of the literature.

Finally, a bibliometric analysis was conducted to analyze the trends in the research areas, noticing the most influential authors and journals, current topics, clusters, tendency and evolution of the theme over the years, relating innovation, sustainability, sustainable development, project management, small and medium-sized enterprises.

4.1 Systematic literature review

4.1.1 General results

The following search string was used to return the papers related to the scope of the research in the Scopus and Web of Science databases: (TITLE-ABS-KEY ("project management" AND ("innovat*" OR "sustainab*") AND ("practice*" OR "benefit*")) AND ALL (("sme*" OR "small and medium* enterprise*"))). The result of the research showed 284 and 35 records on Scopus and Web of Science, respectively, totalizing 319 initial records.

Table 2 presents the results after applying the filters regarding document type and language in both databases. Only articles written in English were considered in the study, reducing the sample space for 168 articles, from which the process of identification, screening and inclusion in the SLR was initiated.

Table 2 - Application of the filters in the databases

Search String	Database	Initial records	Filter 1 (Document type: Article)	Filter 2 (Language: English)
(TITLE-ABS-KEY ("project management" AND ("innovat*" OR "sustainab*") AND ("practice*" OR "benefit*")) AND ALL (("sme*" OR "small and medium* enterprise*")))	Scopus	284	149	148
	Web of Science	35	20	20
Total		319	169	168

Despite both databases containing the most reputable journals, the results returned by the databases suggested that Scopus is a more extensive database than Web of Science, once, for the same search string, it returned a bigger sample of articles.

The 319 records were sorted according to the number of publications per year as per Figure 14. No filter regarding date range was added to the search string exactly because the objective was to identify the maximum of documents related to the scope of the research, and to observe the growth of the number of publications over the years, but even so, the oldest publication dates from 1999. Furthermore, an increasing tendency of publication can be observed in the last years, with publications from 2016 until 2021 representing more than 50% of the publications in the entire time-space.

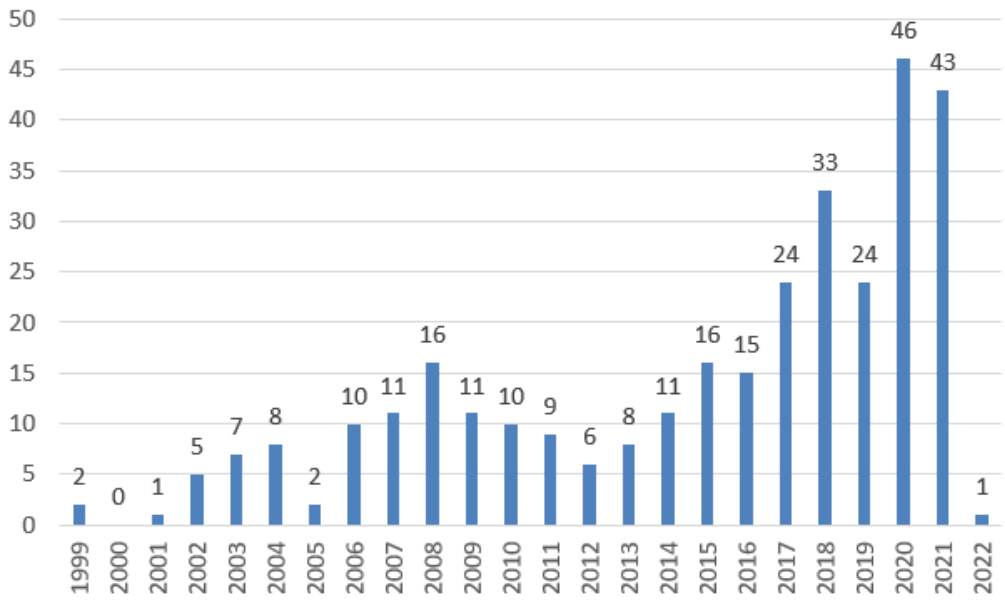

Figure 14 - Number of publications over the years

From this sample of 168 articles identified on databases after applying the document type and language filters, it is crucial to select the studies that bring added value to this research. For this purpose, the PRISMA 2020 methodology was applied to improve the identification, selection, evaluation and synthesis of the findings (Page et al., 2021). The flowchart with the steps and reasons for exclusion was shown in Figure 12 in the research methodology chapter. Table 3 summarizes the results of the PRISMA 2020 methodology and indicates how, from 168 articles, 46 articles were selected with contributions to this research.

It is worth mentioning again that the methodology PRISMA 2020 is useful to ensure that the proposed information is captured, but not intended to guide the systematic review or a quality assessment instrument (Page et al., 2021).

After discovering which articles bring real contributions to this research, i.e. the 46 articles with added value, the number of publications relating to these articles per year was identified, as shown in Table 4. As Figure 14, Table 4 also indicates that there is an increasing variation in the number of publications in recent years, where publications from 2016 to 2021 represent over 60% of the 46 articles listed.

Table 3 - Synthesis of the PRISMA 2020 methodology results

Articles identification, selection, evaluation, and synthesis (PRISMA 2020)	Number
(+) Total articles identified on Scopus	148
(+) Total articles identified on Web of Science	20
(-) Duplicate articles	13
(-) Articles in disagreement with the filters	1
Screened articles included in the title/abstract review	154
(-) Articles excluded for not answering the research questions	89
Articles sought for retrieval	65
(-) Articles not retrieved/not accessed	5
Articles included in the full text review	60
(-) Articles without added value	15
(+) Articles identified from citations searching	1
Articles with added value included in the RSL	46

Table 4 - Percentage per year of articles with added value to the SLR

Year	Number of articles with added value	%
2003	1	2.17
2004	0	0.00
2005	0	0.00
2006	1	2.17
2007	0	0.00
2008	2	4.35
2009	2	4.35
2010	1	2.17
2011	1	2.17
2012	1	2.17
2013	1	2.17
2014	3	6.52
2015	2	4.35
2016	3	6.52
2017	3	6.52
2018	4	8.70
2019	2	4.35
2020	10	21.74
2021	9	19.57
Total	46	100.00

Table 5 identified the journals in which the 46 articles with value-added were published and the method through which each research was conducted. With respect to methods, the most recurrent approach applied were survey (18 articles), case study (12 articles) and literature reviews (8 articles). Concerning the journals, 24 different journals were identified. The ones which contained the highest number of published articles were those focused on sustainability or the environment, and PM.

Figure 15 indicates the frequency in descending order of the number of publications by journals of the 46 articles with relevant contributions, and stated that the Journal of Cleaner Production took a dominant role (8 articles). Then, the second and third journals, namely the International Journal of Project Management and the Sustainability, in terms of publication had the same number each (7 articles). Other relevant journals can be cited with more than one article, such as the Project Management Journal, International Journal of Managing Projects in Business, and Production Planning and Control each (2 articles).

Table 6 summarizes the main findings of the 46 articles considered as the core of this research. The contributions to this study were generally expected to be some sustainable or innovative practices that could be applied to PM and some benefit or positive feedback reported for those who used these practices. Besides the practices and benefits, some concepts, definitions and discussions on the subject were also used to endorse the SLR, such as ecodesign, innovation and OI, SME-related issues and others.

Table 5 - Journals and methods of the articles with added value

No.	Author(s)	Title	Journal	Research Method
1	Zaleski and Michalski (2021)	Success factors in sustainable management of it service projects: Exploratory factor analysis	Sustainability (Switzerland)	Questionnaire-based research
2	Pertuz and Pérez (2020)	Innovation management practices: review and guidance for future research in SMEs	Management Review Quarterly	Scoping review
3	Guertler and Sick (2021)	Exploring the enabling effects of project management for SMEs in adopting open innovation – A framework for partner search and selection in open innovation projects	International Journal of Project Management	Multi-case study
4	Locatelli et al. (2021)	What about the people? Micro-foundations of open innovation in megaprojects	International Journal of Project Management	Interview
5	Marcelino-Sádaba (2021)	Successful implementation of Project Risk Management in small and medium enterprises: a cross-case analysis	International Journal of Managing Projects in Business	Multiple-case study
6	Vrchota et al. (2020)	Critical success factors of the project management in relation to industry 4.0 for sustainability of projects	Sustainability (Switzerland)	Survey
7	Severo et al. (2020)	Project management and innovation practices: backgrounds of the sustainable competitive advantage in Southern Brazil enterprises	Production Planning and Control	Survey
8	Žužek et al. (2020)	Adopting agile project management practices in non-software SMEs: A case study of a slovenian medium-sized manufacturing company	Sustainability (Switzerland)	Literature review and case study
9	Ullah, Waris, et al. (2020)	A construct validation approach for exploring sustainability adoption in pakistani construction projects	Buildings	Survey
10	Ullah, Khan, et al. (2020)	A structural model for the antecedents of sustainable project management in Pakistan	Sustainability (Switzerland)	Survey
11	Dasović et al. (2020)	A survey on integration of optimization and project management tools for sustainable construction scheduling	Sustainability (Switzerland)	Survey

Table 5 - Continued

No.	Author(s)	Title	Journal	Research Method
12	Willar et al. (2021)	Sustainable construction practices in the execution of infrastructure projects: The extent of implementation	Smart and Sustainable Built Environment	Survey
13	Tonso and Carvalho (2020)	The challenges of project management in small and medium-sized enterprises: A literature review based on bibliometric software and content analysis	Gestao e Producao	Literature review
14	Urbinati et al. (2020)	Stakeholder management in open innovation projects: a multiple case study analysis	European Journal of Innovation Management	Multiple-case study
15	Shah and Ganji (2019)	Sustainability adoption in project management practices within a social enterprise case	Management of Environmental Quality: An International Journal	Literature review and survey
16	Gunduz and Alfar (2019)	Integration of innovation through analytical hierarchy process (Ahp) in project management and planning	Technological and Economic Development of Economy	Survey
17	Paula Pinheiro et al. (2018)	Framework proposal for ecodesign integration on product portfolio management	Journal of Cleaner Production	Systematic analysis and literature review
18	Gluch and Svensson (2018)	On the nexus of changing public facilities management practices: purposive and co-creative actions across multiple levels	Construction Management and Economics	Case study
19	Machuca and Miras-rodríguez (2018)	Drivers that encourage environmental practices in manufacturing plants: A comparison of cultural environments	Journal of Cleaner Production	Survey
20	Yu (2018)	Integrating sustainability into construction engineering projects: Perspective of sustainable project planning	Sustainability (Switzerland)	Survey

Table 5 - Continued

No.	Author(s)	Title	Journal	Research Method
21	Banihashemi et al. (2017)	Critical success factors (CSFs) for integration of sustainability into construction project management practices in developing countries	International Journal of Project Management	Survey
22	Aleksic et al. (2017)	Project management issues: vulnerability management assessment	Kybernetes	Grounded theory
23	Annarelli et al. (2014)	Web-application development projects by online communities Which practices favor innovation?	Industrial Management and Data Systems	Multiple-case study
24	Yusof et al. (2016)	Linking the environmental practice of construction firms and the environmental behavior of practitioners in construction projects	Journal of Cleaner Production	Questionnaire-based field survey
25	Marnewick (2016)	Benefits of information system projects: The tale of two countries	International Journal of Project Management	Semi-structured interviews
26	Baldassarri et al. (2020)	Integration of environmental aspects into R&D inter-organizational projects management: Application of a life cycle-based method to the development of innovative windows	Journal of Cleaner Production	Case study
27	Brones and Monteiro De Carvalho (2015)	From 50 to 1: Integrating literature toward a systemic ecodesign model	Journal of Cleaner Production	Systematic literature review
28	Y. Qu et al. (2015)	Sustainable development of eco-industrial parks in China: Effects of managers' environmental awareness on the relationships between practice and performance	Journal of Cleaner Production	Survey
29	Warda (2014)	Mediation effect of sustainability competencies on the relation between barriers and project sustainability (the case of Egyptian higher education enhancement projects)	Sustainability Accounting, Management and Policy Journal	Self-administered questionnaire

Table 5 - Continued

No.	Author(s)	Title	Journal	Method
30	Franks and Vanclay (2013)	Social Impact Management Plans: Innovation in corporate and public policy	Environmental Impact Assessment Review	Literature review
31	Kapsali (2011)	Systems thinking in innovation project management: A match that works	International Journal of Project Management	Multiple-case study
32	Turner et al. (2010)	Project management in small to medium-sized enterprises: Matching processes to the nature of the firm	International Journal of Project Management	Semi-structured interviews
33	Klewitz and Hansen (2014)	Sustainability-oriented innovation of SMEs: a systematic review	Journal of Cleaner Production	Systematic review
34	Mahmoud and Beheiry (2021)	Sustainability Inclusion in Construction Contracts Index	Journal of Legal Affairs and Dispute Resolution in Engineering and Construction	Case study
35	Alyamani et al. (2021)	Evaluating decision making in sustainable project selection between literature and practice	Sustainability (Switzerland)	Fuzzy analytic hierarchy process (FAHP)
36	Kampf et al. (2021)	Using action research in innovation project management: building legitimacy and organizational learning in an SME during a merger process	International Journal of Managing Projects in Business	Case study
37	Yusof et al. (2020)	Going beyond environmental regulations-The influence of firm size on the effect of green practices on corporate financial performance	Corporate Social Responsibility and Environmental Management	Survey
38	Pollack and Adler (2018)	Does Project Management Affect Business Productivity? Evidence From Australian Small to Medium Enterprises	Project Management Journal	Survey
39	Sońta-Drączkowska and Mrożewski (2020)	Exploring the Role of Project Management in Product Development of New Technology-Based Firms	Project Management Journal	Survey

Table 5 - Continued

No.	Author(s)	Title	Journal	Method
40	Sargent et al. (2012)	Factors Influencing the Adoption of Information Technology in a Construction Business	Construction Economics and Building	Case study
41	Federici (2009)	Factors influencing ERP outcomes in SMEs: a post-introduction assessment	Journal of Enterprise Information Management	Interview
42	Little and Ag (2003)	Bottom-up or top-down? Evolutionary change management in NPD processes	International Journal of Technology Management	Comparative case research and questionnaire
43	Manley et al. (2009)	Relationship between construction firm strategies and innovation outcomes	Journal of Construction Engineering and Management	Survey
44	Joore (2008)	The V-Cycle for system innovation translating a broad societal need into concrete product service solutions: the multifunctional centre Apeldoorn case	Journal of Cleaner Production	Case study
45	Stewart (2008)	A framework for the life cycle management of information technology projects: ProjectIT	International Journal of Project Management	Conceptual study
46	Maravelakis et al. (2006)	Measuring and benchmarking the innovativeness of SMEs: A three-dimensional fuzzy logic approach	Production Planning and Control	Conceptual study and survey

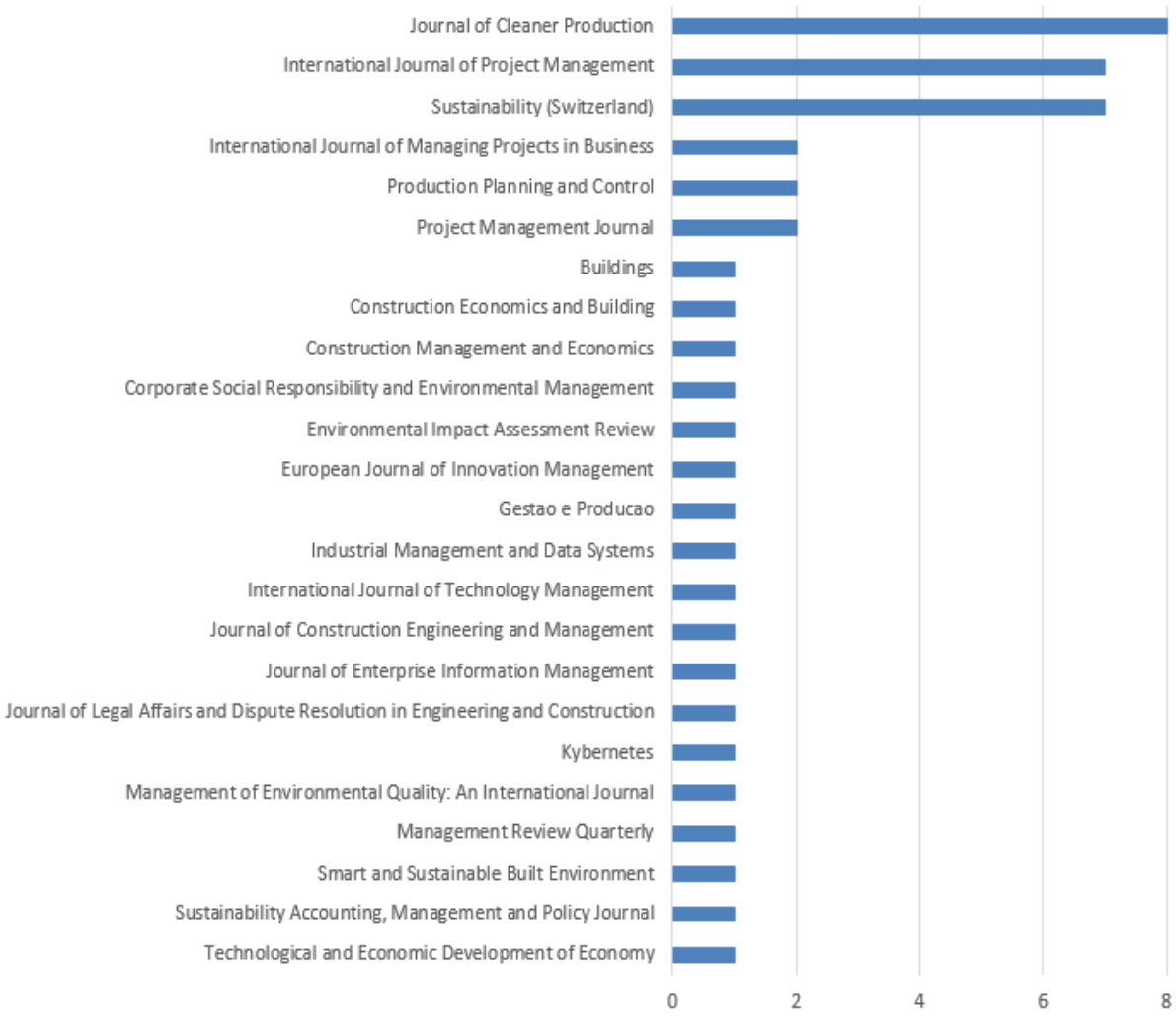

Figure 15 - Number of publications by journals

Table 6 - Articles with added value and their main contributions to this study

No.	Author(s)	Title	Main contributions to this study
1	Zaleski and Michalski (2021)	Success factors in sustainable management of its service projects: Exploratory factor analysis	General concepts regarding sustainable project management and sustainable practices
2	Pertuz and Pérez (2020)	Innovation management practices: review and guidance for future research in SMEs	Identification of 116 innovation management practices classified in 13 categories used in different kinds of companies, focusing on SMEs
3	Guertler and Sick (2021)	Exploring the enabling effects of project management for SMEs in adopting open innovation – A framework for partner search and selection in open innovation projects	Concepts of OI, its challenge for SMEs, a situational OI framework that supports SMEs in leveraging the complementarities between OI and project management and the main benefits/positive feedback in its application
4	Locatelli et al. (2021)	What about the people? Micro-foundations of open innovation in megaprojects	Notions of Innovation management in megaprojects in the OI context, development of knowledge and technology within collaborations and personal benefits achieved
5	Marcelino-Sádaba (2021)	Successful implementation of Project Risk Management in small and medium enterprises: a cross-case analysis	Socio-economic importance of SMEs, how project risk management practice can help SMEs, the perceived benefits, and the relevance of project's technologic innovativeness, innovativeness for the market, project management complexity and strategic
6	Vrchota et al. (2020)	Critical success factors of the project management in relation to industry 4.0 for sustainability of projects	Relation of SPM with SMEs governance, the success of projects in the long-term, resources, TBL's dimensions, stakeholders, corporate responsibility, SD and some sustainable practices that could be addressed
7	Severo et al. (2020)	Project management and innovation practices: backgrounds of the sustainable competitive advantage in Southern Brazil enterprises	Analysis of business environment needs to achieve a sustainable competitive advantage through a sustainable and innovative approach, some related project management practices and benefits

Table 6 - Continued

No.	Author(s)	Title	Main contributions to this study
8	Žužek et al. (2020)	Adopting agile project management practices in non-software SMEs: A case study of a Slovenian medium-sized manufacturing company	Contribution of agile project management practices to sustainable project management, alternative strategies to increase SMEs agility and some benefits in adopting them
9	Ullah, Waris, et al. (2020)	A construct validation approach for exploring sustainability adoption in Pakistani construction projects	Concepts of SPM, its growing significance, the sustainable practices under the corporate social responsibility aspects of social, economic and environmental dimensions and the main sustainable benefits
10	Ullah, Khan, et al. (2020)	A structural model for the antecedents of sustainable project management in Pakistan	The focus of SPM on environmental, economic and social aspects while managing projects, sustainable business practices and some benefits that could be considered in sustainable project management
11	Dasović et al. (2020)	A survey on integration of optimization and project management tools for sustainable construction scheduling	Relation of sustainability with PM through the practice of sustainable scheduling, in terms of continuous optimal time and resource allocation during the project life cycle
12	Willar et al. (2021)	Sustainable construction practices in the execution of infrastructure projects: The extent of implementation	Evaluation of implementing sustainable principles in infrastructure projects, understanding the practices of sustainable construction, which have a positive impact on the environment, socioeconomic and culture that could be considered in sustainable project management
13	Tonso and Carvalho (2020)	The challenges of project management in small and medium-sized enterprises: A literature review based on bibliometric software and content analysis	SMEs contribution and its challenges regarding innovative capacity and the use of PM practices by SMEs in their processes
14	Urbinati et al. (2020)	Stakeholder management in open innovation projects: a multiple case study analysis	Innovation contribution to firms survival, lack of PM adoption in OI projects and some innovative PM practices

Table 6 - Continued

No.	Author(s)	Title	Main contributions to this study
15	Shah and Ganji (2019)	Sustainability adoption in project management practices within a social enterprise case	Discuss the adoption of sustainable practices in some sectors, projects and key activities of SD, comparison between dedications of for-profit and non-profit organizations to SD, contributions of sustainable practices to the success of the project and benefits related to sustainability implementation
16	Gunduz and Alfar (2019)	Integration of innovation through analytical hierarchy process (Ahp) in project management and planning	Important input factor to start the innovation process and its respective major obstacle, practices that contribute to the innovative process and the respective benefits of innovation for organizations
17	Paula Pinheiro et al. (2018)	Framework proposal for ecodesign integration on product portfolio management	A bridge between PM and sustainability, ecodesign concepts and a framework with the tripartite dimensions for the integration of ecodesign into management with practices that can be addressed
18	Gluch and Svensson (2018)	On the nexus of changing public facilities management practices: purposive and co-creative actions across multiple levels	The process through which new management practices are developed within a sustainable context to meet sustainable goals
19	Machuca and Miras-rodríguez (2018)	Drivers that encourage environmental practices in manufacturing plants: A comparison of cultural environments	Understanding of how environmentally-friendly actions can affect a firm's performance and some environmental practices that could be addressed
20	Yu (2018)	Integrating sustainability into construction engineering projects: Perspective of sustainable project planning	Sustainability approach under the context of projects, with SPM focused on planning, monitoring and controlling of project based on the environmental, economic and social principles
21	Banihashemi et al. (2017)	Critical success factors (CSFs) for integration of sustainability into construction project management practices in developing countries	Innovation definitions, a link between innovation and sustainable PM and some sustainable practices that can be considered in PM

Table 6 - Continued

No.	Author(s)	Title	Main contributions to this study
22	Aleksic et al. (2017)	Project management issues: vulnerability management assessment	Sustainable practice specifically concerning long-term sustainability through staff development
23	Annarelli et al. (2014)	Web-application development projects by online communities Which practices favour innovation?	Evaluation of the innovation process that can be favored by virtual communities of practice for web application development projects, which of these practices can be addressed to innovative PM and the main benefits in adopting them
24	Yusof et al. (2016)	Linking the environmental practice of construction firms and the environmental behavior of practitioners in construction projects	Contributions of the construction industry to the environmental industry, its main source of pollutions and its main environmental practices
25	Marnewick (2016)	Benefits of information system projects: The tale of two countries	Conceptualization of benefits in terms of project success and perception of benefits as a perceived positive outcome by stakeholders in addition to the triple constraint
26	Baldassarri et al. (2020)	Integration of environmental aspects into R&D inter-organizational projects management: Application of a lifecycle-based method to the development of innovative windows	Sustainable practices extracted from the integration of environmental aspects into R&D PM taking into consideration the increasing life cycle assessment required
27	Brones and Monteiro De Carvalho (2015)	From 50 to 1: Integrating literature toward a systemic ecodesign model	Map of the scientific art of ecodesign, the relation of environmental sustainability with product innovation, and a conceptual framework that combines scientific constructs and best practices with five integration principles, which some of those practices can be extracted to sustainable PM
28	Y. Qu et al. (2015)	Sustainable development of eco-industrial parks in China: Effects of managers' environmental awareness on the relationships between practice and performance	Importance of the environmental awareness to SD in an organization and some environmental practices that can be considered in the SPM

Table 6 - Continued

No.	Author(s)	Title	Main contributions to this study
29	Warda (2014)	Mediation effect of sustainability competencies on the relation between barriers and project sustainability (the case of Egyptian higher education enhancement projects)	Emphases of the importance that PM gives to sustainability issues and human competencies and some recommendations and sustainable practices to incorporate sustainability in PM
30	Franks and Vanclay (2013)	Social Impact Management Plans: Innovation in corporate and public policy	Comparison between the management of social impacts and environmental impacts, contributing with some sustainable practices to PM
31	Kapsali (2011)	Systems thinking in innovation project management: A match that works	System thinking and innovativeness concepts and contribution to effective PM practices suitable for innovation projects, comparison with conventional PM and some innovative practices to PM improvement regarding the thematic
32	Turner et al. (2010)	Project management in small to medium-sized enterprises: Matching processes to the nature of the firm	SMEs key contribution to the economy and innovation, the importance of PM as facilitating of these contributions, differences regarding PM needs between SMEs and large companies, and some practices that support the working of project teams
33	Klewitz and Hansen (2014)	Sustainability-oriented innovation of SMEs: a systematic review	Observation of Innovation-based SMEs tendency to seek innovative solutions to environmental and social challenges, the importance of being competitive in changing market and environment still contributing to SD, the process, organizational and product innovation, and some sustainable-oriented innovation practices that can be addressed to PM
34	Mahmoud and Beheiry (2021)	Sustainability Inclusion in Construction Contracts Index	Determination of how stakeholders can infer the project's commitment to sustainability and sustainable practices related to all three pillars

Table 6 - Continued

No.	Author(s)	Title	Main contributions to this study
35	Alyamani et al. (2021)	Evaluating decision making in sustainable project selection between literature and practice	Discussion of the multi-criteria decision-making to help project managers to select sustainable projects
36	Kampf et al. (2021)	Using action research in innovation project management: building legitimacy and organizational learning in an SME during a merger process	The consequences and learning from the acquisition process of SMEs by large companies and some practices related to knowledge management in an innovative scenario
37	Yusof et al. (2020)	Going beyond the environmental regulations-The influence of firm size on the effect of green practices on corporate financial performance	Green practices definition and green business practice and the discussion of this thematic within project management, large firms and SMEs scope
38	Pollack and Adler (2018)	Does Project Management Affect Business Productivity? Evidence From Australian Small to Medium Enterprises	The approach of the social and economic importance of SMEs and the importance of PM for their survival
39	Sońta-Drączkowska and Mrożewski (2020)	Exploring the Role of Project Management in Product Development of New Technology-Based Firms	Identification that traditional PM does not sufficiently address the challenges for the management of innovation projects, some supporting practices toward this process and related benefits
40	Sargent et al. (2012)	Factors Influencing the Adoption of Information Technology in a Construction Business	Evaluation of the practice of adopting technologies to PM to assist managers with the control of business functions and their main related benefits
41	Federici (2009)	Factors influencing ERP outcomes in SMEs: a post-introduction assessment	Achieved economic, administrative and operational benefits by adopting enterprise resource planning
42	Little and Ag (2003)	Bottom-up or top-down? Evolutionary change management in NPD processes	Practices that assist PM and implementation of process innovation toward new product development and the main benefits

Table 6 - Continued

No.	Author(s)	Title	Main contributions to this study
43	Manley et al. (2009)	Relationship between construction firm strategies and innovation outcomes	The importance of innovation for economic growth, a guidance for construction firms to improve their innovation performance and some practices related to business strategies that most clearly drive innovation
44	Joore (2008)	The V-Cycle for system innovation translating a broad societal need into concrete product service solutions: the multifunctional center Apeldoorn case	Discussion about sustainable innovation and its growth due to the increasing focus on the TBL and its importance for the social aspect
45	Stewart (2008)	A framework for the life cycle management of information technology projects: ProjectIT	The practice of introducing technology into the project and related tangible benefits
46	Maravelakis et al. (2006)	Measuring and benchmarking the innovativeness of SMEs: A three-dimensional fuzzy logic approach	Embedding SMEs into the subject of adopting tools and techniques used in larger companies to improve their innovation performance, which are the challenges and advantages of joining innovation for SMEs, understanding how innovation measurement can be done within a company, and practices that can be adopted to become more innovative

4.1.2 Sustainable practices found in the SLR

One of the main objectives of this research is to identify in the literature which practices can be applied within a company aiming to enhance sustainability through project management, and consequently in the firm as a whole. Consequently, contributing to filling the gap in this area of knowledge recognized in the literature, namely, related to practices in other spheres of sustainability, not only environmental; and also, practices applicable to sectors other than construction.

Warda (2014) after studying the project sustainability management and relating it with project managers' sustainability competencies, recommended: adding sustainability as part of the departments' strategies and policies, implementing sustainability within the impact evaluation process, opting for sustainability competencies in project managers selection, employing programs of training and development, incorporating the processes of planning and evaluation of project sustainability, including sustainability in PM processes, which help to achieve notable economic, environmental, and social benefits, and hence encouraging the society toward sustainability.

Shah and Ganji (2019) agreed that there are different levels of commitment to SD if comparing for-profit and non-profit organizations, once that the for-profit organizations require the adoption of more strategic decision and organizational culture to obtain SD results, and for that, the adoption of sustainable practices within projects is required. LaBrosse (2010) suggests that the lack of capital of non-profit organizations is a significant barrier to the adoption of sustainable practices.

Shah and Ganji (2019) attested in the literature trends that the implementation of sustainable practices is well established in some sectors, for example, the construction industry, but there is a lack of information regarding other sectors, i.e. social enterprises. Despite the promise of the construction sector to SD, it has been slow in implementing Green Practices (Oshodi & Aigbavboa, 2017), which are practices that cause less harm to the environment (H. Liu & Lin, 2016).

In addition to Green Practices, there are Green Business Practices that refer to the integration of the environmental mission into the firm's business strategy, achieving its objectives and stakeholder needs (Harmon et al., 2009). Yusof et al. (2020) analyzed the effect of the adoption of Green Practices and Green Business Practices on large firms and SMEs and inferred that both can achieve an improvement on financial performance, but large firms enjoy higher financial performance than SMEs if they adopt a high level of Green Business Practices and Green Project Management. Some practices related to Green Business Practices and Green Project Management have been identified in this study, for example: avoiding waste generation or waste to landfill, high level of resource efficiency and recycling of toxic materials or greater investment in environmental management.

Gadenne et al. (2009) classify the environmental practices of a firm in three main fields: energy efficiency, waste management and involvement in environmental efforts. Energy efficiency is regarding reducing the use of energy but offering the same level of service or optimizing the total energy used (Gadenne et al., 2009). Waste management addresses the commonly known concept of reducing, reusing, and recycling (J. Wang et al., 2015). Finally, the involvement in environmental efforts can be observed through the supporting of activities to improve the environment, the commitment to environmental action, the petitioning against activities harmful to the environment or the use of environment-friendly products (Gadenne et al., 2009).

Žužek et al. (2020) analyzed the implementation of Agile Project Management practices in a Slovenian medium-sized company specialized in wire harness for the automotive industry, aiming to show that, instead of adopting a whole structured Agile Project Management methodology, SMEs can implement a few practices and still obtain benefits. The practices considered in the research was: customer and team integration, delivery frequency, customer validation, decision time, and project plan updating time. The study found that even implemented separately, the practices impact positively the project success, especially regarding efficiency and stakeholder satisfaction, helping to establish an economically, environmentally and socially more sustainable workplace.

Ullah et al. (2020) studied SPM practices in construction firms, collecting data from 116 companies in Pakistani. The observed variable analyzed and categorized in economic, environmental and social dimensions was obtained from the existing literature, and some of these variables could be classified as sustainable practices. The authors inferred that the environmental dimension performed as the most important category in terms of practice and social responsibility.

Dasović et al. (2020) studied a sustainable practice in the construction industry, specifically, sustainable scheduling with aid of PM tools, presenting an achievement survey on the combination of optimization and PMT that permit sustainable construction scheduling, in terms of continuous optimal time and resource allocation in the project life cycle. A sustainable schedule must meet the deadlines, even if during the execution of the tasks the parameters require some changes (Baruah & Burns, 2006), and it is not only about delivering an outcome consistent with expectations, by obeying the available budget and time constraints, but also about certifying the sustainability of the decisions in the long term (Hermarij, 2013).

Still, regarding sustainable practices in the construction sector, Mahmoud and Beheiry (2021) intended to help the construction industry stakeholders to determine their project's commitment to sustainable practices and partitioned these practices according to the three pillars of sustainability.

Willar et al. (2021) evaluated the means of applying sustainable principles in infrastructure projects in Indonesia, identifying gaps between the government regulations' indicators of sustainable construction and its practices and barriers that can obstruct the implementation of sustainable principles, agreeing that best sustainable practices that positively influence the socioeconomics, environment and culture must be defined as sources of knowledge for stakeholders to be environmentally friendly and provide benefits for economic and social welfare. The successful application of sustainable principles requires some actions as well as the dedication of all involved parties; these actions present in the literature and mentioned in this study was considered to the range of sustainable practices.

A current practice mentioned in the study of Alyamani et al. (2021) is the multi-criteria decision-making that is related to the capability to select and implement adequate sustainable projects and is a crucial SD factor to make sure that organization or community needs meet. The multi-criteria decision-making involves considering different key sustainable project criteria, for example, cost, maturity, uncertainty, skill and experience, and technology information, by collecting information with SMEs.

Another recurrent practice mentioned sometimes in the literature is ecodesign. It seeks to project products by minimizing their environmental impact throughout the life cycle (Jabbour et al., 2018). Paula Pinheiro et al. (2018) proposed one theoretical framework integrating ecodesign practices, methods, and tools with portfolio management during the planning stage according to a systematic analysis of the literature. The framework is tripartite and contains the following dimensions: Guides, Methods, and Tools; Organization; and Strategy. Although these elements refer to portfolio management, some of these could be considered regarding sustainable practices.

Also regarding the ecodesign topic and incorporation of environmental aspects into projects and product development process, Brones and Monteiro De Carvalho (2015) used a SLR to understand the condition of the scientific art on ecodesign. As one of the results of the study, a framework that combines scientific constructs and best practices with five integration principles was produced.

Gluch and Svensson (2018) were involved in a case study considering the changing of management practices in public facilities to understand the process through which new management practices for sustainability are developed in a specific context. Some responsibilities were considered correspondent to the environmental sustainability targets, for example, emissions, resource use, sound building materials, transport, climate change, health, energy efficiency and others. The renovation on an organizational level was also taken into account and considered a sustainable practice to encourage sustainability.

Machuca and Miras-rodríguez (2018) analyzed the kind of drivers that most encourage sustainable practices in manufacturing plants differed across the cultural environments. They aimed empirically analyze if the cultural environment influences the drivers that encourage environmental practices relating the environmental practices and the company financial performance. For that a questionnaire was applied in 230 manufacturing plants from 10 countries, taking into consideration 24 drives and 41 environmental practices.

Banihashemi et al. (2017) studied the critical success factors for the integration of sustainability into PM practices of construction projects within developing countries by conducting 16 semi-structured interviews and presenting a conceptual model validated through a survey that returned 101 answered questionnaires. The factors associated with the improvement of sustainability in construction projects and PMP were found through a literature review and combined a list of 332 factors, 56 if which to be applied in the study.

Yusof et al. (2016) stated that the belief in the construction industry contributes to environmental sustainability has increased the demand for environmental sustainability in the sector, and for that reason investigate the relationship between the environmental practices of construction firms and the environmental behavior of professionals during project implementation through a questionnaire-based field survey approach with a sample of 375 architectural, engineering, and contracting firms in Malaysia. Some environmental practices can be extracted from Yusof et al. (2016) research regarding construction projects, especially related to energy efficiency, waste management and environmental involvement, as previously considered by Gadenne et al. (2009) the components of the environmental practices, and, also, some items related to the practitioner's environmental behavior in construction projects.

Qu et al. (2015) investigated, using an empirical study, the relationship of environmental practices, the environmental awareness of eco-industrial parks' managers and SD performance, creating a conceptual model. Environmental awareness is considered the set of ideas concerning the relationship between human beings and the Earth, improving environmental protection and implementing it (Chen & Lou, 2003) and it is related to environmental practices. Due to this relation and the positive impact of environmental practices on SD performance attested in this study, first, Qu et al. (2015) identified the key environmental practices considering three aspects under the previous literature: instituting environmental norms, building industrial symbiosis and providing guidance to the key enterprises.

Finally, Klewitz and Hansen (2014) explored emergent themes, pointed out important gaps and contributed to theory development regarding sustainable-oriented innovation in the context of SMEs

through a systematic review and answered which practices of sustainability-oriented product, process, and organizational innovations occur within SMEs and how they are interrelated.

According to Ekonomicznego We Wrocławiu and Rojek-Nowosielska (2015), sustainable practices can be classified under the TBL. Therefore, in this research, the sustainable practices were divided according to these three perspectives, i.e. environmental performance (planet), social performance (people) and economic performance (profit).

Table 7 summarizes the sustainable practices separated into the above mentioned categories, the reference in which article they were identified, the frequency in number of times the practice was cited among the articles included in the SLR and the percentage (ratio between the frequency of the referred practice and the sum of the frequency of all sustainable practices), once sometimes the same practice is cited in different studies.

It was identified 86 sustainable practices, from which 40 are related to environmental performance, 24 to social performance and 22 to economic performance as shown in Figure 16 in terms of percentages.

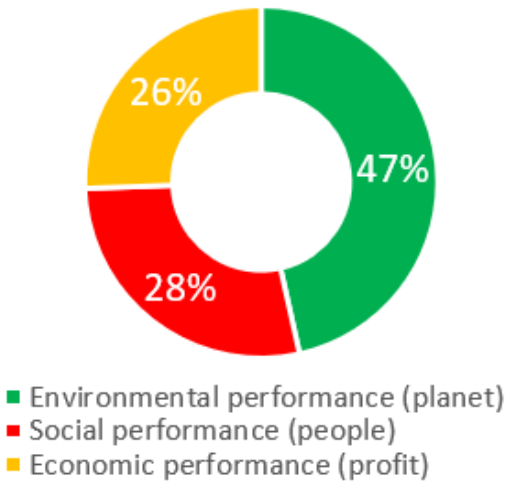

Figure 16 - Percentages of sustainable practices categories in number of practices

Some sustainable practices were cited more often among the articles of the SLR, presuming that they have more relevance and incidence among the studies and managers. Among the sustainable practices related to environmental performance, the ones that were most frequently identified were the following: 'Implementing waste management' (7 times), 'Use of energy/renewable resources' (6 times), 'Reduce waste production/disposal' (6 times) and 'Ecodesign' (5 times).

In addition, the sustainable practices related to social performance, the ones most reoccurring were the following: 'Generating and transferring of knowledge/awareness of sustainable concepts - staff development' (6 times), 'Engaging/collaborating with stakeholders in project activities and processes' (5

times), ‘Implementing health and safety measures’ (3 times), and ‘Protecting of the claims and rights of the people in the community’ (3 times).

Finally, the sustainable practices related to the economic performance with a higher frequency level were: ‘Strategic planning’ (3 times), ‘Formulating polices towards sustainability promotion’ (3 times), ‘Coordinating of supply chain actions’ (2 times), ‘Implementing cleaner production’ (2 times), ‘Decision make guides’ (2 times) and ‘Project Risk Management’ (2 times).

Although the literature divides sustainable practices according to the TBL perspectives, and in this study, they had been divided into the three categories mentioned above, it is clear that even though some practices are more related to one category, some of them can be related to more than one aspect of sustainability at the same time.

Table 7 - Sustainable practices that can be applied in the project management of small and medium-sized enterprises divided into categories

Category	ID	Description	Freq.	%	References
1 - Environmental performance (planet)	SP1	Co-develop with suppliers to reduce the environmental impact of the product	1	0.65	Machuca and Miras-rodríguez (2018)
	SP2	Collaborate with customers to achieve environmental objectives	3	1.94	Machuca and Miras-rodríguez (2018) Banihashemi et al. (2017) Y. Qu et al. (2015)
	SP3	Encourage suppliers to improve the environmental performance of their processes	1	0.65	(Machuca & Miras-rodríguez, 2018)
	SP4	Decreasing the likelihood or impact of an environmental accident	1	0.65	Machuca and Miras-rodríguez (2018)
	SP5	Reduce waste production/disposal	6	3.87	Vrchota et al. (2021) Ullah, Khan, et al. (2020) Willar et al. (2021) Machuca and Miras-rodríguez (2018) Yusof et al. (2016) Yusof et al. (2016)
	SP6	Reducing usage of hazardous materials	1	0.65	Ullah, Khan, et al. (2020)
	SP7	Recycling of toxic materials	1	0.65	Yusof et al. (2020)
	SP8	Reusing and recycling of waste materials	3	1.94	Ullah, Khan, et al. (2020) Yusof et al. (2016) Klewitz and Hansen (2014)
	SP9	Investing in environmental management	1	0.65	Yusof et al. (2020)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
1 - Environmental performance (planet)	SP10	Collecting data about harmful emissions	2	1.29	Vrchota et al. (2021) Machuca and Miras-rodríguez (2018)
	SP11	Carbon tracking/carbon footprint calculation	1	0.65	Machuca and Miras-rodríguez (2018)
	SP12	Establishing pollution and carbon emission discharge requirements	1	0.65	Y. Qu et al. (2015)
	SP13	Minimizing energy consumption/energy efficiency	3	1.94	Machuca and Miras-rodríguez (2018) Yusof et al. (2016) Baldassarri et al. (2020)
	SP14	Using renewable energy/resources	6	3.87	Ullah, Waris, et al. (2020) Ullah, Khan, et al. (2020) Machuca and Miras-rodríguez (2018) Baldassarri et al. (2020) Y. Qu et al., 2015) (Mahmoud and Beheiry (2021)
	SP15	Environmental auditing	3	1.94	Ullah, Waris, et al. (2020) Ullah, Khan, et al. (2020) Machuca and Miras-rodríguez (2018)
	SP16	Minimizing water and noise pollutions	1	0.65	Banihashemi et al. (2017)
	SP17	Reducing greenhouse gas emissions	1	0.65	Mahmoud and Beheiry (2021)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
1 - Environmental performance (planet)	SP18	Reducing the overall emissions	2	1.29	Machuca and Miras-rodríguez (2018) Baldassarri et al. (2020) Willar et al. (2021)
	SP19	Ecodesign	5	3.23	Paula Pinheiro et al. (2018) Machuca and Miras-rodríguez (2018) Brones and Monteiro De Carvalho (2015)
	SP20	Utilizing/preferring sustainable materials and environmentally responsible products	3	1.94	Klewitz and Hansen (2014) Willar et al. (2021) Machuca and Miras-rodríguez (2018)
	SP21	Giving preference to materials with third-party certifications (Green Seal, FSC or Energy Star)	1	0.65	Yusof et al. (2016) Machuca and Miras-rodríguez (2018)
	SP22	Minimizing the use of water or natural resources	3	1.94	Ullah, Khan, et al. (2020) Willar et al. (2021) Machuca and Miras-rodríguez (2018)
	SP23	Inserting and monitoring formally the green practices and environmental requirements in projects	2	1.29	Willar et al. (2021) Brones and Monteiro De Carvalho (2015)
	SP24	Create metrics to verify environmental parameters (checklists, scoring, ranking, diagrams, matrices)	3	1.94	Willar et al. (2021) Paula Pinheiro et al. (2018) Y. Qu et al. (2015)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
1 - Environmental performance (planet)	SP25	Analyzing environmental impact	2	1.29	Willar et al. (2021) Banihashemi et al. (2017)
	SP26	Use of environmentally preferable packaging	1	0.65	Machuca and Miras-rodríguez (2018)
	SP27	Providing design specifications to suppliers in line with environmental requirements	1	0.65	Machuca and Miras-rodríguez (2018)
	SP28	Life-cycle analysis	3	1.94	Machuca and Miras-rodríguez (2018) Brones and Monteiro De Carvalho (2015) Klewitz and Hansen (2014)
	SP29	Incorporating environmental considerations in evaluating and partnering/selecting suppliers	2	1.29	Machuca and Miras-rodríguez (2018) Yusof et al. (2016)
	SP30	Complying with environmental protection agency regulations	1	0.65	Ullah, Khan, et al. (2020)
	SP31	Reducing contamination of the surrounding environment	1	0.65	Mahmoud and Beheiry (2021)
	SP32	Certifying in accordance with ISO14001	3	1.94	Machuca and Miras-rodríguez (2018) Y. Qu et al. (2015)
	SP33	Establishing energy exhaustion requirements	1	0.65	Klewitz and Hansen (2014) Y. Qu et al. (2015)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
1 - Environmental performance (planet)	SP34	Implementing waste management	7	4.52	Ullah, Waris, et al. (2020) Willar et al. (2021) Machuca and Miras-rodríguez (2018) Banihashemi et al. (2017) Yusof et al. (2016) Klewitz and Hansen (2014) Mahmoud and Beheiry (2021)
	SP35	Energy auditing	1	0.65	Y. Qu et al. (2015)
	SP36	Material flow analysis	1	0.65	Y. Qu et al. (2015)
	SP37	Implementing sustainability within the impact assessment process	1	0.65	Warda (2014)
	SP38	Preparing environmental plans	1	0.65	Franks and Vanclay (2013)
	SP39	Inserting an environmental manager or specialist into the team who translates aspects of sustainability competencies	2	1.29	Paula Pinheiro et al. (2018) Warda (2014)
	SP40	Planning of land use	3	1.94	Willar et al. (2021) Machuca and Miras-rodríguez (2018) Mahmoud and Beheiry (2021)
2 - Social performance (people)	SP41	Implementing health and safety measures	3	1.94	Ullah, Waris, et al. (2020) Banihashemi et al. (2017) Klewitz and Hansen (2014)
	SP42	Protecting the claims and rights of the people in the community	3	1.94	Ullah, Waris, et al. (2020) Ullah, Khan, et al. (2020) Mahmoud and Beheiry (2021)
	SP43	Reducing effects on the surrounding community	1	0.65	Mahmoud and Beheiry (2021)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
2 - Social performance (people)	SP44	Assessing social impact	1	0.65	Franks and Vanclay (2013)
	SP45	Creating multidisciplinary team	2	1.29	Paula Pinheiro et al. (2018) Banihashemi et al. (2017)
	SP46	Improving the workforce environment	1	0.65	Machuca and Miras-rodríguez (2018)
	SP47	Intervening in the workplace to encourage responsible behavior toward the environment in employees	1	0.65	Yusof et al. (2016)
	SP48	Improving employee commuting issues (e.g., carpooling, bike garage)	1	0.65	Machuca and Miras-rodríguez (2018)
	SP49	Promoting local employment	1	0.65	Mahmoud and Beheiry (2021)
	SP50	Use of multi-criteria decision-making	1	0.65	Alyamani et al. (2021)
	SP51	Purchasing from minority- or women-owned business enterprise (M/WBE) suppliers	1	0.65	Machuca and Miras-rodríguez (2018)
	SP52	Enhancing living conditions and reducing labour exploitation	1	0.65	Mahmoud and Beheiry (2021)
	SP53	Ensuring that suppliers comply with child labour laws	1	0.65	Machuca and Miras-rodríguez (2018)
	SP54	Asking suppliers to pay a ‘living wage’	1	0.65	Machuca and Miras-rodríguez (2018)
	SP55	Using a third party to monitor working conditions at supplier facilities	1	0.65	Machuca and Miras-rodríguez (2018)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
2 - Social performance (people)	SP56	Engaging/collaborating with stakeholders in project activities and processes	5	3.23	Zaleski and Michalski (2021) Žužek et al. (2020) Paula Pinheiro et al. (2018) Machuca and Miras-rodríguez (2018) Banihashemi et al. (2017)
	SP57	Committing of all parties who are involved in construction projects, including government, service providers and the community as users	1	0.65	Willar et al. (2021)
	SP58	Generating and transferring of knowledge/awareness of sustainable concepts (staff development)	6	3.87	Severo et al. (2020) Willar et al. (2021) Banihashemi et al. (2017) Aleksic et al. (2017) Warda (2014) Klewitz and Hansen (2014)
	SP59	Establishing the relationship between enterprises and their suppliers outside	1	0.65	Y. Qu et al. (2015)
	SP60	Managing stakeholders	1	0.65	Klewitz and Hansen (2014)
	SP61	Carrying out daily stand-up meetings	1	0.65	Žužek et al. (2020)
	SP62	Identifying the responsibilities of each party in the management of impacts, opportunities and risks.	1	0.65	Franks and Vanclay (2013)
	SP63	Preparing social management plans	1	0.65	Franks and Vanclay (2013)
	SP64	Complying with a customer's supplier or industry-widecode of conduct	2	1.29	Machuca and Miras-rodríguez (2018) Klewitz and Hansen (2014)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
3 - Economic performance (profit)	SP65	Implementing own source of energy	1	0.65	Vrchota et al. (2021)
	SP66	Exchanging by-products and wastes	1	0.65	Y. Qu et al. (2015)
	SP67	Training and investment in resource-efficient methods	1	0.65	Willar et al. (2021)
	SP68	Sustainable scheduling (optimal time and resource allocation)	1	0.65	Dasović et al. (2020)
	SP69	Coordinating of supply chain actions	2	1.29	Willar et al. (2021) Klewitz and Hansen (2014)
	SP70	Improving transportation efficiency	1	0.65	Klewitz and Hansen (2014)
	SP71	Implementing cleaner production	2	1.29	Y. Qu et al. (2015) Klewitz and Hansen (2014)
	SP72	Linking project management to agile principles	1	0.65	Zaleski and Michalski (2021)
	SP73	Incorporating sustainability into PM processes	1	0.65	Warda (2014)
	SP74	Strategic planning	3	1.94	Paula Pinheiro et al. (2018) Banihashemi et al. (2017) Brones and Monteiro De Carvalho (2015)
	SP75	Alignment of project goals with stakeholders' needs	1	0.65	Banihashemi et al. (2017)
	SP76	Renovating on organizational level	1	0.65	Gluch and Svensson (2018)
	SP77	Maximizing resource reuse	1	0.65	Mahmoud and Beheiry (2021)
	SP78	Decision make guides	2	1.29	Paula Pinheiro et al. (2018) Banihashemi et al. (2017)
	SP79	Iterative and adaptive planning	1	0.65	Žužek et al. (2020)
	SP80	Minimizing resource consumption	1	0.65	Mahmoud and Beheiry (2021)
	SP81	Project Risk Management	2	1.29	Marcelino-Sádaba (2021) Banihashemi et al. (2017)

Table 7 - Continued

Category	ID	Description	Freq.	%	References
	SP82	Aligning strategy and corporate objectives	1	0.65	Brones and Monteiro De Carvalho (2015)
	SP83	Using long life-cycle materials	1	0.65	Mahmoud and Beheiry (2021)
3 - Economic	SP84	Defining goals and prioritizing of all stakeholders	1	0.65	Banihashemi et al. (2017)
performance (profit)	SP85	Dedicating and co-locating project team	1	0.65	Žužek et al. (2020)
					Willar et al. (2021)
	SP86	Formulating policies towards sustainability promotion	3	1.94	Warda (2014)
					Klewitz and Hansen (2014)
Total			155	100	

4.1.3 Innovative practices found in the SLR

Continuing the achievement of one of the objectives of this research, through an SLR, practices were identified to strengthen innovation through the PM within SMEs context, helping to improve their processes and competitiveness in the market, which appear in the literature as one of the main reasons why organizations seek to be innovative.

Manley et al. (2009) developed an empirical study to inform the best strategy practices used by innovative companies to seek that firms to improve their innovation performance, providing five types of business strategies that mainly drive internal innovation in a project-based environment, namely: employee, technology, marketing, knowledge and relationship strategy.

Urbinati et al. (2020) investigated innovation activities to external partners and how project stakeholder management is different in OI projects from traditional R&D projects, through interviews with interpretative qualitative nature and clustered the collected information in: Identify Stakeholders and Plan Stakeholder Engagement, Coordinate Stakeholder Engagement and Monitor Stakeholder Engagement, that compose the stakeholder management, recognized as a relevant practice in management research by Donaldson (1999).

Annarelli et al. (2014) through a multiple case study research design evaluated the characteristics of a new organizational form in web application development for generating innovation called virtual communities, and one of the analyzed features were the management practices directed towards improving innovation performance. The paper offered a study of practices used in web application development projects and identified the best practices to enhance its effectiveness. It was attested that the management practices should differ according to the phases of the project, i.e requirements specification, design, implementation and verification of the software.

Kampf et al. (2021) studied innovation PM in a merger context, particularly when larger corporations acquire innovative SMEs. In this case, issues related to inter-organizational legitimacy appear for SME innovation managers and it is supposed to continue innovating successfully, while the organization learns with this condition. The study was performed through an action research case study, and some of these practices regarding knowledge diffusion were addressed to this research.

Sońta-Drączkowska and Mrożewski (2020) explored the role of PM in the product development of new technology firms and enumerated a set of practices that are affected to new product development based on entrepreneurs' perceptions. In addition, the study concluded that PMP are mostly associated efficiency of product success.

Turner et al. (2010) agreed that SMEs use PM to manage operations, innovation and growth. The author also identified the nature of the PM required by SMEs interviewing people from micro, small and medium sizes of companies from different industries and countries. One of the main founds of the research was the fifteen PMP referred to by the respondents as essential.

Pertuz and Pérez (2020), studied IMP and developed a systematic review regarding innovative practices for future research in SMEs. In their work, it was identified 116 practices, divided into 13 categories, namely: Benchmarking and business intelligence; Marketing activities and identification of market needs to innovate; Idea generation techniques; Definition of innovation strategies, objectives and processes; Exploitation, exploration and knowledge management; Characteristics of the organization and resources for the development of innovation; Practices related to human talent management for innovation; Collaboration, strategic alliances, and open innovation; Project management; Implementation of changes or improvements in products and organizational processes; Use of technologies in the innovation process; Formal evaluation of the results of innovation and management of the intellectual property; and Measuring the impact of innovation.

The above mentioned study and practices were taken into consideration, and in addition to these 116 practices, another 50 new practices were found in this SLR, besides other many practices which were already contemplated in Pertuz and Pérez (2020) work. In addition, the categories determined by Pertuz and Pérez were maintained, and these 50 new innovative practices were framed within these 13 categories.

Figure 17, through a pie chart, identifies the percentage in number of practices that each category presents. It can be observed that the categories with the highest number of related practices: Project management (28 practices) and Implementation of changes or improvements in products and organizational processes (24 practices).

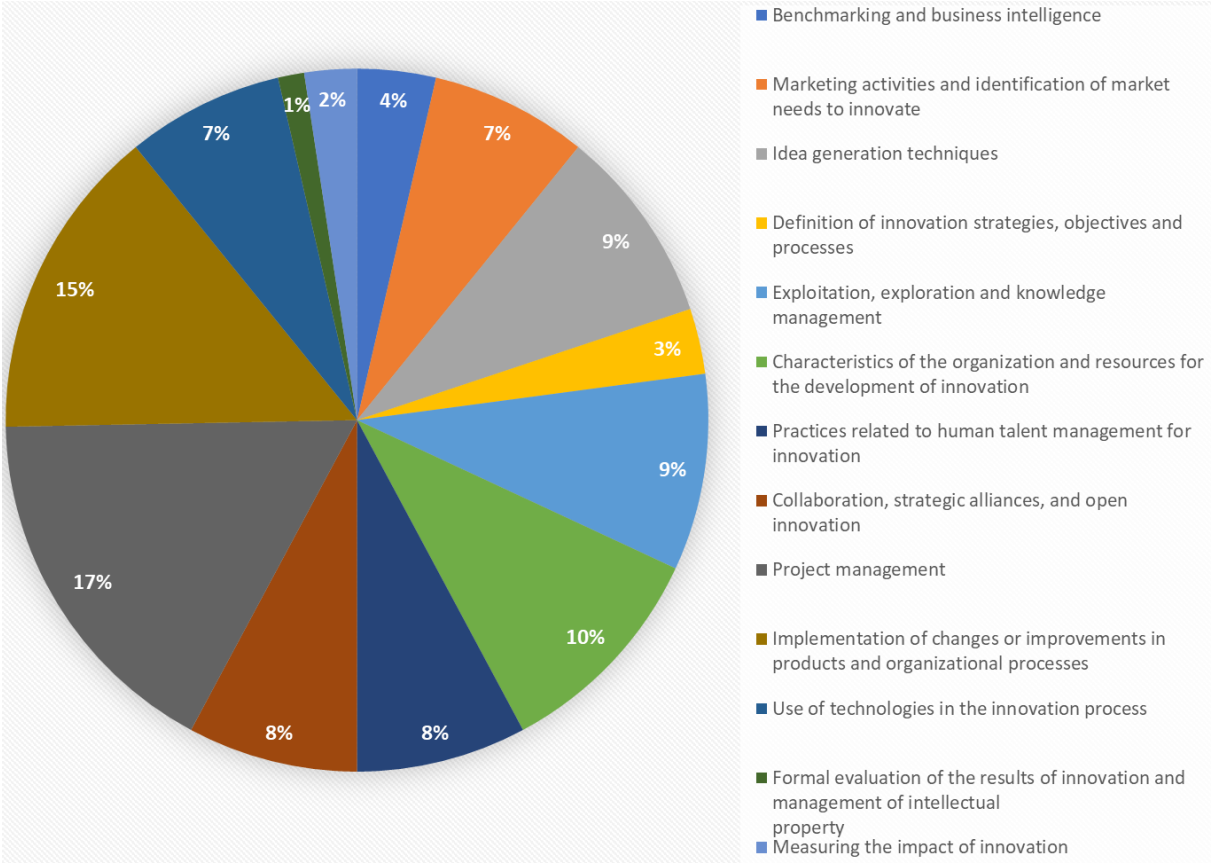

Figure 17 - Percentages of innovative practices categories in number of practices

Table 8 contains the 166 listed innovative practices divided into 13 categories, the frequency in number and percentage in which each practice was cited in the literature considered in this SLR, and the reference article where each practice was identified.

Some practices that strengthen the innovative PM presented in Table 8 appeared with higher frequency among the 46 articles considered as the core of this SLR, such as 'Diffusing and sharing information, ideas and knowledge' (3 times), and other practices which were also cited more than once, for example: 'Using brainstorming'; 'Acquiring knowledge internally'; 'Acquiring knowledge externally'; 'Investing in R&D'; 'Using milestone-based project reviews'; 'Using technology to assist resource coordination and allocation'; and others.

Practices related to knowledge generation and transference, for example, SP58 in Table 7, were also identified in the literature as one of the practices with higher frequency and, therefore, relevance between sustainable practices, which highlights the importance of this theme for both sustainability and innovation.

Table 8 - Innovative practices that can be applied in the project management of small and medium-sized enterprises divided into categories

Category	ID	Description	Freq.	%	References
1 - Benchmarking and business intelligence	IP1	Competition-informed pricing: check competitors' current price strategy	1	0.56	Pertuz and Pérez (2020)
	IP2	Check the degree of competition on the market and estimate the strength of competitors to react and the competitive advantages of competitors on the market	1	0.56	Pertuz and Pérez (2020)
	IP3	Executing technological benchmarking and competitive technology intelligence	1	0.56	Pertuz and Pérez (2020)
	IP4	Using benchmarking to bring performance levels up	1	0.56	Manley et al. (2009)
	IP5	Using benchmarking and scenarios for external business intelligence	1	0.56	Pertuz and Pérez (2020)
	IP6	Using internal and external sources of data for business intelligence	1	0.56	Pertuz and Pérez (2020)
2 - Marketing activities and identification of market needs to innovate	IP7	Opening new markets abroad	1	0.56	Pertuz and Pérez (2020)
	IP8	Creating new domestic target groups	1	0.56	Pertuz and Pérez (2020)
	IP9	Executing punctual and systematic marketing prospection	1	0.56	Pertuz and Pérez (2020)
	IP10	Developing marketing efforts to launch and disseminate innovations	1	0.56	Pertuz and Pérez (2020)
	IP11	Realizing presentations, conferences and lobbying to launch and diffuse innovations	1	0.56	Pertuz and Pérez (2020)
	IP12	Having a stated and working marketing innovation strategy	1	0.56	Pertuz and Pérez (2020)
	IP13	Promoting the effective participation of customers in launching and disseminating innovations	1	0.56	Pertuz and Pérez (2020)
	IP14	Proposing problems and challenges by users	1	0.56	Annarelli et al. (2014)
	IP15	Performing market research or viability studies because innovation is profoundly associated with a previously identified demand	1	0.56	Pertuz and Pérez (2020)
	IP16	Focusing on achieving a balanced portfolio of competitive advantages and innovations for which customers are willing to pay	1	0.56	Pertuz and Pérez (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
3 - Idea generation techniques	IP17	Improve market share	1	0.56	Manley et al. (2009)
	IP18	Conducting extensive boundary management to handle the volatility of user behavior and retain their commitment	1	0.56	Kapsali (2011)
	IP19	Promoting idea generation as part of innovation process management	1	0.56	Pertuz and Pérez (2020)
	IP20	Possibility to comment on ideas in specific spaces	1	0.56	Annarelli et al. (2014)
	IP21	Using brainstorming	2	1.12	Pertuz and Pérez (2020); Sońta-Drączkowska and Mrożewski (2020)
	IP22	Conducting focus groups	1	0.56	Pertuz and Pérez (2020)
	IP23	Performing generation and spontaneous search for ideas	1	0.56	Pertuz and Pérez (2020)
	IP24	Using ideation support and using an idea database to manage ideas	1	0.56	Pertuz and Pérez (2020)
	IP25	Selecting ideas based on the criteria of market viability and the technological situation of the company	1	0.56	Pertuz and Pérez (2020)
	IP26	Selecting ideas based on the criteria of alignment of interests and the strategic vision of the company	1	0.56	Pertuz and Pérez (2020)
	IP27	Selecting ideas based on the criteria of shareholders	1	0.56	Pertuz and Pérez (2020)
	IP28	Establishing idea generation assessment processes	1	0.56	Pertuz and Pérez (2020)
	IP29	Capturing ideas from external agents (customers and innovation intermediaries)	1	0.56	Pertuz and Pérez (2020)
	IP30	Using forecasting tools and techniques to imagine future threats and to construct scenarios	1	0.56	Pertuz and Pérez (2020)
	IP31	Analysing lead users	1	0.56	Pertuz and Pérez (2020)
	IP32	User ranking	1	0.56	Annarelli et al. (2014)
	IP33	Reviewing consumption tendencies (ethnographic research)	1	0.56	Pertuz and Pérez (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
4 - Definition of innovation strategies, objectives and processes	IP34	Assigning a high level of importance to the innovation strategy of the company to achieve the success of the process	1	0.56	Pertuz and Pérez (2020)
	IP35	Having a stated, articulated, explicit and prioritized innovation strategy	1	0.56	Pertuz and Pérez (2020)
	IP36	Aligning and integrating the corporate strategy with the innovation's portfolio	1	0.56	Pertuz and Pérez (2020)
	IP37	Defining innovation goals, objectives and targets	1	0.56	Pertuz and Pérez (2020)
	IP38	Defining a process of innovation management in the company to guarantee the effective development of innovation (ideation, evaluation, selection and monitoring of innovation)	1	0.56	Pertuz and Pérez (2020)
5 - Exploitation, exploration and knowledge management	IP39	Capturing organizational knowledge and cultivating staff to provide system-wide thinking and specialized knowledge	1	0.56	Pertuz and Pérez (2020)
	IP40	Acquiring knowledge internally: viewing knowledge as a competitive advantage to be gained from inside the company	2	1.12	Pertuz and Pérez (2020) Gunduz and Alfar (2019)
	IP41	Acquiring knowledge externally: viewing knowledge as a competitive advantage to be gained from outside the company	2	1.12	Pertuz and Pérez (2020) Gunduz and Alfar (2019)
	IP42	Participating of knowledge conversion cycle	1	0.56	Kampf et al. (2021)
	IP43	Participating in apprenticeship programs	1	0.56	Manley et al. (2009)
	IP44	Performing R&D activities: tasks related to fundamental knowledge acquisition and creation	1	0.56	Pertuz and Pérez (2020)
	IP45	Managing a suitable collective learning environment	1	0.56	Pertuz and Pérez (2020)
	IP46	Exploitation: using existing knowledge and seeking to deepen it to solve specific problems	1	0.56	Pertuz and Pérez (2020)
	IP47	Diffusing and sharing information, ideas and knowledge	3	1.68	Annarelli et al. (2014) Kampf et al. (2021) Manley et al. (2009)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
6 - Characteristics of the organization and resources for the development of innovation	IP48	Disciplinary repertoires: learning, meaning, identity, engagement	1	0.56	Kampf et al. (2021)
	IP49	Encouraging employees to attend training sessions	2	1.12	Severo et al. (2020) Manley et al. (2009)
	IP50	Using multi-skilled teams	1	0.56	Manley et al. (2009)
	IP51	Building and using knowledge stock	1	0.56	Kampf et al. (2021)
	IP52	Transferring project learnings into continuous business processes	1	0.56	Manley et al. (2009)
	IP53	Exchanging information, ideas and knowledge	1	0.56	Annarelli et al. (2014)
	IP54	The organization is willing to implement changes effectively to take calculated risks	1	0.56	Pertuz and Pérez (2020)
	IP55	Implementing a participatory management model	1	0.56	Pertuz and Pérez (2020)
	IP56	Implementing a biological management model	1	0.56	Pertuz and Pérez (2020)
	IP57	Using systems thinking methods	1	0.56	Kapsali (2011)
	IP58	Decision making is decentralized	1	0.56	Pertuz and Pérez (2020)
	IP59	Use-oriented and result-oriented business models	1	0.56	Pertuz and Pérez (2020)
	IP60	Implementing structuring of physical, technological and knowledge-based consortiums focused on solving complex problems and generating new products	1	0.56	Pertuz and Pérez (2020)
	IP61	Investing in technology	1	0.56	Pertuz and Pérez (2020)
	IP62	Promoting systematic resources for innovation	1	0.56	Pertuz and Pérez (2020)
	IP63	Separating the product improvement budget from the R&D budget	1	0.56	Pertuz and Pérez (2020)
	IP64	Financing innovation projects with internal resources	1	0.56	Pertuz and Pérez (2020)
	IP65	Financing innovation projects with external resources (R + D + i development agencies, partners, tax incentives and laws)	1	0.56	Pertuz and Pérez (2020)
	IP66	Making portfolio decisions based on financial estimates	1	0.56	Pertuz and Pérez (2020)
	IP67	Developing negotiation maturity and focalization	1	0.56	Pertuz and Pérez (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
6 - Characteristics of the organization and resources for the development of innovation	IP68	Viewing innovation as an embedded part of daily work and turning innovation into a companywide task	1	0.56	Pertuz and Pérez (2020)
	IP69	Developing tasks to allocate and manage competences for the success of the innovation process	1	0.56	Pertuz and Pérez (2020)
	IP70	Investing in R&D	2	1.12	Gunduz and Alfar (2019) Manley et al. (2009)
7 - Practices related to human talent management for innovation	IP71	Using cross functional innovation groups (cross-functional teaming/cross-training specialists)	1	0.56	Pertuz and Pérez (2020)
	IP72	Change, recruitment and selection of personnel focus on innovation, and employees are highly skilled.	1	0.56	Pertuz and Pérez (2020)
	IP73	Managers emphasize working efficiency and acting effectively, and every employee and department must compete with its peers for better efficiency	1	0.56	Pertuz and Pérez (2020)
	IP74	Managers set clear goals and ask employees to focus on meeting the goals	1	0.56	Pertuz and Pérez (2020)
	IP75	Leaders are role models for innovative behavior	1	0.56	Pertuz and Pérez (2020)
	IP76	Employees are loyal to one another, and teamwork is emphasized	1	0.56	Pertuz and Pérez (2020)
	IP77	Promoting organizational climate, organizational forms for innovation activities, decision-making and human resources management practices aimed at innovation	1	0.56	Pertuz and Pérez (2020)
	IP78	Open communication channels for all functions and ranks in the organization and increasing the influence of downstream functions in upstream decisions	1	0.56	Pertuz and Pérez (2020)
	IP79	The firm is stable and offers job security to employees	1	0.56	Pertuz and Pérez (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
7 - Practices related to human talent management for innovation	IP80	Top management aims to provide moral support for innovation process participants, and managers treat all staff as members of a big family	1	0.56	Pertuz and Pérez (2020)
	IP81	Providing new skills for the company within and outside itself	1	0.56	Pertuz and Pérez (2020)
	IP82	Keeping a project management file to improve our employees' qualifications	1	0.56	Severo et al. (2020)
	IP83	Ability to define and satisfy clients' specific requirements	2	1.12	Annarelli et al. (2014) Turner et al. (2010)
8 - Collaboration, strategic alliances, and open innovation	IP84	Establishing strategic alliances, collaborating with outside partners, and participating in cooperation networks	1	0.56	Pertuz and Pérez (2020)
	IP85	Client related (early engagement, deep understanding, feedback, listening, talking)	2	1.12	Sońta-Drączkowska and Mrożewski (2020) Manley et al. (2009)
	IP86	Developing projects with external equipment	1	0.56	Pertuz and Pérez (2020)
	IP87	Collaborating with universities in scientific or technological activities	1	0.56	Pertuz and Pérez (2020)
	IP88	Collaborating with suppliers to obtain technological knowledge and project management	1	0.56	Pertuz and Pérez (2020)
	IP89	Top management undertakes tasks concerning the management of the networks in which the company operates	1	0.56	Pertuz and Pérez (2020)
	IP90	Performing searches and mobilizing resources through internal R&D, R&D contracting; R&D partnerships and joint ventures	1	0.56	Pertuz and Pérez (2020)
	IP91	Developing open innovation processes	1	0.56	Pertuz and Pérez (2020)
	IP92	Open-source innovation	1	0.56	Annarelli et al. (2014)
	IP93	Open-source projects	1	0.56	Annarelli et al. (2014)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
8 - Collaboration, strategic alliances, and open innovation	IP94	Collaborating between consumers' community and developers' community	1	0.56	Annarelli et al. (2014)
	IP95	Creating a team choosing from community's users	1	0.56	Annarelli et al. (2014)
	IP96	Creating a professional relationship with community members	1	0.56	Annarelli et al. (2014)
9 - Project management	IP97	Executing systematic, punctual and formal project management and following up on innovative projects	1	0.56	Pertuz and Pérez (2020)
	IP98	Proper and detailed planning	1	0.56	Sońta-Drączkowska and Mrożewski (2020)
	IP99	Strengthening the role of project managers	1	0.56	Pertuz and Pérez (2020)
	IP100	Appointing key individuals to execute and develop innovation projects	1	0.56	Pertuz and Pérez (2020)
	IP101	Appointing internal teams to execute and develop innovation projects	1	0.56	Pertuz and Pérez (2020)
	IP102	Appointing external teams to execute and develop innovation projects	1	0.56	Pertuz and Pérez (2020)
	IP103	Using milestone-based project reviews	2	1.12	Pertuz and Pérez (2020) Turner et al. (2010)
	IP104	Using road map	1	0.56	Turner et al. (2010)
	IP105	Using stage-gate development projects	1	0.56	Pertuz and Pérez (2020)
	IP106	Using work breakdown or activity lists	1	0.56	Turner et al. (2010)
	IP107	Using multi-criteria analysis for project portfolio management	1	0.56	Pertuz and Pérez (2020)
	IP108	Using project management tools for the development and monitoring of projects	1	0.56	Pertuz and Pérez (2020)
	IP109	Performing project portfolio management	1	0.56	Pertuz and Pérez (2020)
	IP110	Carrying out a follow-up of projects through decision meetings held weekly or biweekly	1	0.56	Pertuz and Pérez (2020)
	IP111	Working based on the innovation funnel approach for the sequencing of projects	1	0.56	Pertuz and Pérez (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
9 - Project management	IP112	Documenting the lessons learned: building online databases with the lessons learned and best practice templates	1	0.56	Pertuz and Pérez (2020)
	IP113	Implementing documentation tools, methodologies and the transfer of the lessons learned	1	0.56	Pertuz and Pérez (2020)
	IP114	Implementing stakeholder management	1	0.56	Urbinati et al. (2020)
	IP115	Identifying stakeholders and planning stakeholder engagement	1	0.56	Urbinati et al. (2020)
	IP116	Coordinating stakeholder engagement	1	0.56	Urbinati et al. (2020)
	IP117	Monitoring stakeholder engagement	1	0.56	Urbinati et al. (2020)
	IP118	Using minimum critical specifications to measure outcomes	1	0.56	Kapsali (2011)
	IP119	Handling operational change and boundary management activities with flexibility	2	1.12	Kapsali (2011); Sońta-Drączkowska and Mrożewski (2020)
	IP120	Applying agile type methodologies	1	0.56	Turner et al. (2010)
	IP121	Developing team building	1	0.56	Turner et al. (2010)
	IP122	Short interactions	1	0.56	Sońta-Drączkowska and Mrożewski (2020)
	IP123	Implementing kickoff meetings	1	0.56	Turner et al. (2010)
	IP124	Supporting lectures, courses and articles by attending meetings and through the projects team reports by managers.	1	0.56	Severo et al. (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
10 - Implementation of changes or improvements in products and organizational processes	IP125	Killing underperforming projects	1	0.56	Pertuz and Pérez (2020)
	IP126	Mapping processes to reduce non-value activities	1	0.56	Pertuz and Pérez (2020)
	IP127	Shorter time from concept to full-scale delivery of the service and shorter response time to order for existing services	1	0.56	Pertuz and Pérez (2020)
	IP128	Reducing the cost of service delivery and reducing the cost of service development	1	0.56	Pertuz and Pérez (2020)
	IP129	Personalizing products	1	0.56	Sońta-Drączkowska and Mrożewski (2020)
	IP130	Delivering products/services which reduce clients' costs	1	0.56	Manley et al. (2009)
	IP131	Reorganization of jobs to reduce hand-offs	1	0.56	Pertuz and Pérez (2020)
	IP132	Revising and improving existing products and services (upgraded features)	1	0.56	Pertuz and Pérez (2020)
	IP133	Short time for adjustments to complaints	1	0.56	Pertuz and Pérez (2020)
	IP134	Easier customer use after purchase	1	0.56	Pertuz and Pérez (2020)
	IP135	Increasing the quality of products and the production process	2	1.12	Pertuz and Pérez (2020) Sońta-Drączkowska and Mrożewski (2020)
	IP136	Repackaging existing products or services and extending products or services	1	0.56	Pertuz and Pérez (2020)
	IP137	Informing news through newsletter	1	0.56	Annarelli et al. (2014)
	IP138	Developing and promoting new products or services or new lines of products or services	1	0.56	Pertuz and Pérez (2020)
	IP139	Making major and rapid changes to existing services	1	0.56	Pertuz and Pérez (2020)
	IP140	Adopting minimal viable product	1	0.56	Sońta-Drączkowska and Mrożewski (2020)
	IP141	Using continuous product/service improvement teams	1	0.56	Pertuz and Pérez (2020)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
11 - Use of technologies in the innovation process	IP142	Measuring compliance with processes, procedures and service development process	1	0.56	Pertuz and Pérez (2020)
	IP143	Simulating process (planning, simulation, feedback)	1	0.56	Little and Ag (2003)
	IP144	Institutionalizing continuous improvement processes	1	0.56	Pertuz and Pérez (2020)
	IP145	Improving the documentation of processes	1	0.56	Pertuz and Pérez (2020)
	IP146	Setting standards for the performance of services	1	0.56	Pertuz and Pérez (2020)
	IP147	Clear and precise specifying	1	0.56	Sońta-Drączkowska and Mrożewski (2020)
	IP148	Improve safety	1	0.56	Gunduz and Alfar (2019)
	IP149	Using up-to-date/new technology for new product development and in the process	1	0.56	Pertuz and Pérez (2020)
	IP150	Constructing technology roadmaps of products to execute technology intelligence and monitor technological tendencies (mapping out patents, the Delphi method, forecasting, TRIZ and prospection)	1	0.56	Pertuz and Pérez (2020)
	IP151	Using technologies to assist resource coordination and allocation	2	1.12	Sargent et al. (2012) Federici (2009)
	IP152	Systematically managing the portfolio of technologies	1	0.56	Pertuz and Pérez (2020)
	IP153	Using internal communications via any computer network, for example, e-mail	1	0.56	Pertuz and Pérez (2020)
	IP154	Using distributed databases online for multiple functions	1	0.56	Pertuz and Pérez (2020)
	IP155	Update information technology systems	1	0.56	Pertuz and Pérez (2020)
	IP156	Using common software for process mapping	1	0.56	Pertuz and Pérez (2020)
	IP157	Using support software and keeping committed to early planning aiming at quality	1	0.56	Severo et al. (2020)
	IP158	Introducing information technology into projects	1	0.56	Stewart (2008)

Table 8 - Continued

Category	ID	Description	Freq.	%	References
12 - Formal evaluation of the results of innovation and management of intellectual property	IP159	Testing (process, code review, automation)	1	0.56	Sońta-Drączkowska and Mrożewski (2020)
	IP160	Aligning the business strategy and technology	1	0.56	Pertuz and Pérez (2020)
	IP161	Defining a formal process to evaluate the results of innovation (definition and evaluation of metrics, system of success indicators for projects)	1	0.56	Pertuz and Pérez (2020)
	IP162	Managing the intellectual property derived from the company's innovation activities	1	0.56	Pertuz and Pérez (2020)
13 - Measuring the impact of innovation	IP163	Measuring environmental impact	1	0.56	Pertuz and Pérez (2020)
	IP164	Acquiring new technologies related to the sustainability strategy	1	0.56	Pertuz and Pérez (2020)
	IP165	Work proactively to improve our social and community impact	1	0.56	Pertuz and Pérez (2020)
	IP166	Developing environment-friendly products	1	0.56	Pertuz and Pérez (2020)
Total			179	100.00	

4.1.4 Achieved benefits found in the SLR

The mapping of the benefits achieved by those who used innovative or sustainable practices was also a target of this SLR. The importance of determining this indicator in this research is due to the fact that benefits are also considered a way to identify the success of a project.

Guertler and Sick (2021) studied the enabling effects of PM for SMEs in adopting OI and developed a framework for searching and selecting OI project partners. The study consists of exploratory multi-cases research developed with four SMEs to provide a leveraging of the complementarities between OI and PM. The results indicated how sensing capabilities for OI opportunities can be benefited from the systematic problem and stakeholder analysis. It was obtained from the OI projects of the four case studies some benefits registered by the company as positive feedback, such as helping to identify valuable stakeholders and inputs, supporting knowledge transfer between disciplinary silos, and others.

Due to the socio-economic relevance of the SMEs, Marcelino-sadaba (2021) studied the adoption of Project Risk Management in SMEs with a positive cost-benefit ratio. A multiple-case study was conducted with 10 companies in Italy and Spain. The complexity, innovation, and relevance of the projects were evaluated: the innovativeness for the market and the PM complexity were medium-high; project technologic innovativeness was high and the strategic significance of the projects was even higher. The complexity and innovation of the cases adopting PMR were high, once a complex project implies higher risks. From this study were inferred and addressed the perceived benefits.

Severo et al. (2020) through a survey in 226 enterprises in the activity sectors of industrial manufacturing, commerce and services in southern Brazil was proposed to analyze the relationship between PM practices, product and process innovation and sustainable competitive advantages. The competitive advantages were considered in Table 9 as the benefits perceived by company managers.

Gunduz and Alfar (2019) based on the data collected using structured questionnaires and analyzed through survey analysis distributed to 121 participants, considered 46 factors involved in the innovation process reviewed in the past literature and categorized them into seven groups. One of these seven groups is the organization benefits: cost-saving, time-saving, quality improvement, technology improvement, safety improvement and market improvement.

The innovative practice of adopting information technologies to PM addressed in the case study of Sargent et al. (2012) specified some benefits related for example to cost and schedule performance improved with increased IT use and positive perception by technology users, reinforcing the need to support new technologies toward management and technical perspective.

Conducing a similar approach of IT tolls introduction into PM, Federici (2009) studied the establishment of resource planning systems in the context of SMEs and found that benefits were achieved in terms of economic results, management control and operating efficiency.

Ullah et al. (2020) during research defined the social, environmental and economic dimension of sustainability in the context of the SPM, and found that the economic dimension is deeply entangled with the other dimensions, and that clients perceive the benefits for their investment through the better lifecycle value; and contractors enjoy the upgrade on their profits from operational efficiency, reduction in waste and, consequently, costs, for example.

Another study of Ullah, Khan, et al. (2020) identified other benefits addressed to this research by considering data from 146 construction companies to analyze the role of normative and mimetic isomorphic pressures as external enablers for integrating sustainability into project processes.

Shah and Ganji (2019) presented in the research carried out by an interview-based survey some findings regarding the use of sustainable PMP within social enterprises, the gaps in this field and the comparison of social-based projects within for-profit and non-profit organizations. Some findings were highlighted such as the lack of sustainable behavior and its adoption within organizations, and the well-established adoption of sustainable practices in some sectors, such as construction, but a lack of information regarding other sectors. It was found in the literature some benefits of implementing and adopting environmental sustainability, i.e. company image and improved stakeholders loyalty, providing competitive advantages for the future (Battilana & Dorado, 2010).

As main findings concerning this research objective of identifying the benefits obtained by those who implement innovation and sustainability into PM, Table 9 summarizes the benefits identified and divides them into categories, referring to the articles from which they were found and the frequency in number and percentage of how many times the benefits were mentioned among the articles used in the SLR.

In total, 61 benefits were gathered and then divided into 7 categories, specifically: Competitive advantage, Product/service, Process, Strategy, Knowledge, Organization and Employees. Figure 18, through a tree map related to the above categories and the percentage that each category represents over the total benefits identified, helped to visualise the categories with the highest number of related benefits. As can be seen, the greatest number of benefits were associated with the organization and the competitive advantage, with 25% and 18% respectively.

In terms of mentions in the literature, the most frequently cited benefits were: ‘Cost saving’ (4 times), ‘Increase production or service provision flexibility’ (3 times) and ‘Improve economic performance’ (3 times). Other ones were also identified in more than one article, such as ‘Improve production or service

provision quality', 'Support of knowledge transfer between disciplinary silos', 'Time saving', 'Development of personal skills and human capacity building', among others.

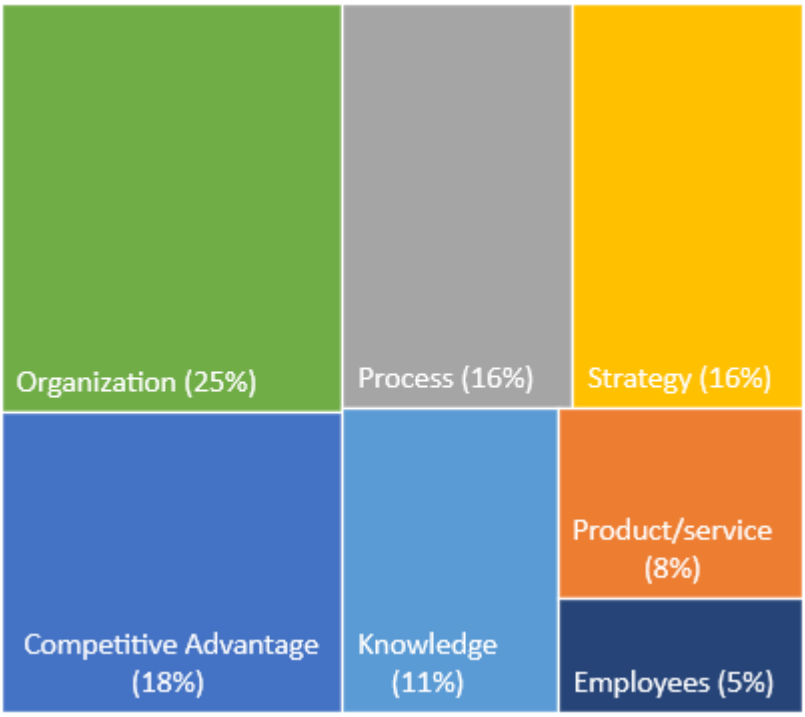

Figure 18 - Percentages of benefits categories in number of benefits

Table 9 - Benefits achieved by those who implement innovative and sustainable practices in project management

Category	ID	Description	Freq.	%	References
1 - Competitive Advantage	B1	Better success rate for new products/services if compared to competitors	1	1.27	Severo et al. (2020)
	B2	Better revenue from new products/services if compared to competitors	1	1.27	Severo et al. (2020)
	B3	Better profitability with new products/services if compared to competitors	1	1.27	Severo et al. (2020)
	B4	Superior overall company performance in the previous year if compared to main competitors	2	2.53	Severo et al. (2020) Ullah, Waris, et al. (2020)
	B5	Better company image	1	1.27	Shah and Ganji (2019)
	B6	Positive user perception	1	1.27	Sargent et al. (2012)
	B7	Increase external client's trust	1	1.27	Locatelli et al. (2021)
	B8	Increase stakeholders loyalty	1	1.27	Shah and Ganji 2019)
	B9	Lower total operating costs than our competitors' total costs	1	1.27	Severo et al. (2020)
	B10	Better competitive potential	1	1.27	Ullah, Waris, et al. (2020)
	B11	Go beyond mere profit generation	1	1.27	Ullah, Khan, et al. (2020)
2 - Product /service	B12	Higher quality of our new products than those of our competitors	1	1.27	Severo et al. (2020)
	B13	Superior functionality and features of products if compared to our competitors'	1	1.27	Severo et al. (2020)
	B14	Incorporate a large body of new technological knowledge into the products	1	1.27	Severo et al. (2020)
	B15	Improve efficiency	2	2.53	Sońta-Drączkowska and Mrożewski (2020)
	B16	Improve technology	1	1.27	Federici (2009) Gunduz and Alfar (2019)

Table 9 - Continued

Category	ID	Description	Freq.	%	References
3 - Process	B17	Increase production or service provision capacity	1	1.27	Severo et al. (2020)
	B18	Increase production or service provision flexibility	3	3.80	Severo et al. (2020) Žužek et al. (2020) Annarelli et al. (2014)
	B19	Reduce costs of production or provision of services	1	1.27	Severo et al. (2020)
	B20	Improve production or service provision quality	2	2.53	Severo et al. (2020) Gunduz and Alfar (2019)
	B21	Better decision-making process	2	2.53	Guertler and Sick (2021) Locatelli et al. (2021)
	B22	Faster detection of discrepancies	1	1.27	Žužek et al. (2020)
	B23	Improve communication both within the team and with the customer	1	1.27	Žužek et al. (2020)
	B24	Procedure simplification	1	1.27	Federici (2009)
	B25	Reducten of time to market	1	1.27	Little and Ag (2003)
	B26	Acess to other's facilities and equipment	1	1.27	Locatelli et al. (2021)
4 - Strategy	B27	Helped to identify valuable stakeholders and inputs	1	1.27	Guertler and Sick (2021)
	B28	Consistency and completeness of supported project planning steps	1	1.27	Guertler and Sick (2021)
	B29	Network expansion	1	1.27	Locatelli et al. (2021)
	B30	Ideas for opening new areas for research	1	1.27	Locatelli et al. (2021)
	B31	Better project planning	1	1.27	Locatelli et al. (2021)
	B32	Faster response to change	1	1.27	Žužek et al. (2020)
	B33	Structured problem analysis allows to identify the actual issue	1	1.27	Guertler and Sick (2021)
	B34	Lower risk impact	1	1.27	Locatelli et al. (2021)
	B35	More effective problem-solving	1	1.27	Žužek et al. (2020)
	B36	Potential applications	1	1.27	Guertler and Sick (2021)

Table 9 - Continued

Category	ID	Description	Freq.	%	References
5 - Knowledge	B37	Support of knowledge transfer between disciplinary silos	2	2.53	Guertler and Sick (2021) Locatelli et al. (2021)
	B38	Information integration	1	1.27	Annarelli et al. (2014)
	B39	Publications and conference attendance	1	1.27	Locatelli et al. (2021)
	B40	Easier information retrieval	1	1.27	Federici (2009)
	B41	Overcomes thinking patterns and broadens solution space	1	1.27	Guertler and Sick (2021)
	B42	Enhance intuitive and experience-driven approach	1	1.27	Guertler and Sick (2021)
	B43	Support to overcoming local search bias	1	1.27	Guertler and Sick (2021)
6 - Organization	B44	Grater probability of project success	1	1.27	Locatelli et al. (2021)
	B45	Better budget control	1	1.27	Locatelli et al. (2021)
	B46	Better project performance	1	1.27	Locatelli et al. (2021)
	B47	Better evaluation of budget reserve	1	1.27	Locatelli et al. (2021)
	B48	Better lifecycle value for the investment	1	1.27	Ullah, Waris, et al. (2020)
	B49	Improve profits from operational efficiency	1	1.27	Ullah, Waris, et al. (2020)
	B50	Time saving	2	2.53	Gunduz and Alfar (2019) Little and Ag (2003)
	B51	Cost saving	4	5.06	Gunduz and Alfar (2019) Little and Ag (2003) Stewart (2008) Federici (2009)
	B52	Cost reduction through waste reduction	1	1.27	Ullah, Waris, et al. (2020)
	B53	Return on investment/profitability	2	2.53	Ullah, Waris, et al. (2020) Ullah, Khan, et al. (2020)
	B54	Survival and success in the long run	2	2.53	Ullah, Waris, et al. (2020) Ullah, Khan, et al. (2020)

Table 9 - Continued

Category	ID	Description	Freq.	%	References
6 - Organization	B55	Improve economic performance	3	3.80	Ullah, Khan, et al. (2020) Yusof et al. (2020)
	B56	Improve schedule performance	1	1.27	Sargent et al. (2012) Sargent et al. (2012)
	B57	Improve performance management	1	1.27	Federici (2009)
	B58	Market improvement	1	1.27	Gunduz and Alfar (2019)
7 - Employees	B59	Employment opportunities	2	2.53	Locatelli et al. (2021) Ullah, Waris, et al. (2020)
	B60	Development of personal skills and human capacity building	2	2.53	Locatelli et al. (2021) Ullah, Waris, et al. (2020)
	B61	Improve employees' occupational health and safety	2	2.53	Ullah, Khan, et al. (2020) Gunduz and Alfar (2019)
Total			79	100.00	

4.2 Bibliometric analysis

This section aims to comprehend how the topics that compose this theme are related and achieve the third research objective, with the development of a bibliometric study with the information available on the Scopus website that relates innovation, sustainability, sustainable development, project management and small and medium-sized enterprises, identifying the main metrics regarding this relationship.

The results found in the bibliometric analysis conducted will be detailed in this section for co-occurrence related to keywords, co-authorship related to authors and co-citations related to authors. The number of documents obtained from the Scopus database (60 documents, considering only the document type article, in English, which have passed the abstract, title and keywords reading stage) involving the terms related to the research string (TITLE-ABS-KEY ("project management" AND ("innovate*" OR "sustainab*") AND ("practice*" OR "benefit*")) AND ALL ("sme*" OR "small and medium* enterprise*"))).

4.2.1 Co-occurrence

Based on the data situated in keywords of the selected articles, and using the co-occurrence type of analysis, the terms repeated at least two times were considered. A pre-processing of data was carried out, replacing similar terms related to the same subject and repeated terms were excluded to avoid false or untrue information in this network.

The analysis found 77 items separated into 7 clusters identified by different colors in Figure 19, characterizing the most frequent terms. Cluster 1, identified in red, consists of 15 items, where the most frequent are "construction industry", "construction projects", "environmental management" and "environmental practices". Cluster 2, in green, consists of 14 items, where the main ones are "project management" and "innovation". Project management, inclusively, is the term with more relevance in terms of occurrences and total link strength. Cluster 3, in dark blue, consists of 13 items, where the most frequent are "management practices", "sustainability" and "corporate social responsibility". Cluster 4, identified in yellow, consists of 12 items, among which the main ones are "investments", "financial data processing", "innovation management" and "ecodesign". Cluster 5, indicated in violet, consists of 11 items, among which, the most frequent and relevant are "stakeholder" and "project success". Cluster 6, in light blue, among which 8 items were identified, the main ones are "sustainable development", "construction" and "planning". Finally, cluster 7, identified in orange, where there are 4 items, among

the most frequently mentioned: "societies and institutions", "product development" and "process innovation".

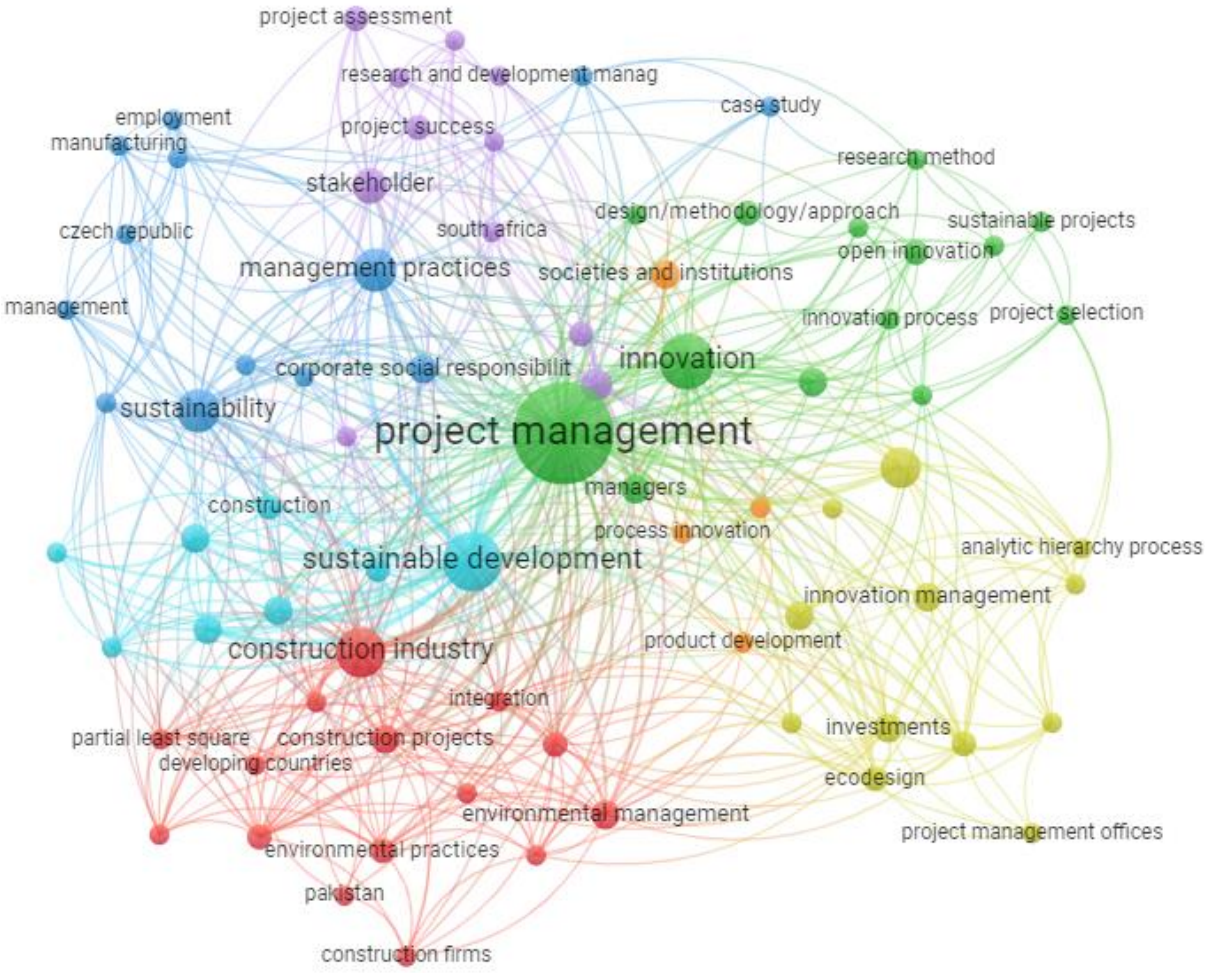

Figure 19 - Network visualization based on bibliographic data (co-occurrence, keywords)

The five most important terms in regard to occurrences and total link strength were, respectively: “project management”, “sustainable development”, “construction industry”, “innovation” and “management practices”. The distribution of the terms present in this network reveals a consolidation of some research subjects in the scope of this study, mainly related to project management, sustainable development, innovation and management practices.

The construction industry, due to its great impact in sustainability and consumption of natural resources, has received attention in relation to sustainability and innovation, leading to many studies directing these

topics to this industry sector. This is the reason for its prominent appearance in the keywords network in cluster 1.

4.2.2 Co-authorship

When analyzing the relation of authors under the co-authorship angle, all authors with more than one publication were selected for the network construction, otherwise, the number of authors would be very small. 168 items were identified, but in the network construction, most of these 168 were not connected. The large set of connected items were 7. This indicates that, for this sample, the co-authorship network consists of a weakly connected network, and the reason for this may be related to the size of the sample, which is considerably small in this case considering the number of articles as input.

Even though a complete analysis of the authors' network under the co-authorship angle was carried out, considering the connected and the unconnected co-authorship group, as shown in Figure 20.

Among the groups, the authors with more co-authored documents were Levitt R.E., Hussian A., Khan A., Khan M.W.A., Rana F. and Ullah M, both with 2 articles. The 10 most cited authors were Banihashemi S., Golizadeh H., Hosseini M.R., Sankaran S., with 125 citations; Kelly J., Ledith A., Turner R., with 101 citations; Kapsali M., with 89 citations; and Franks D.M. and Vanclay F. with 80 citations.

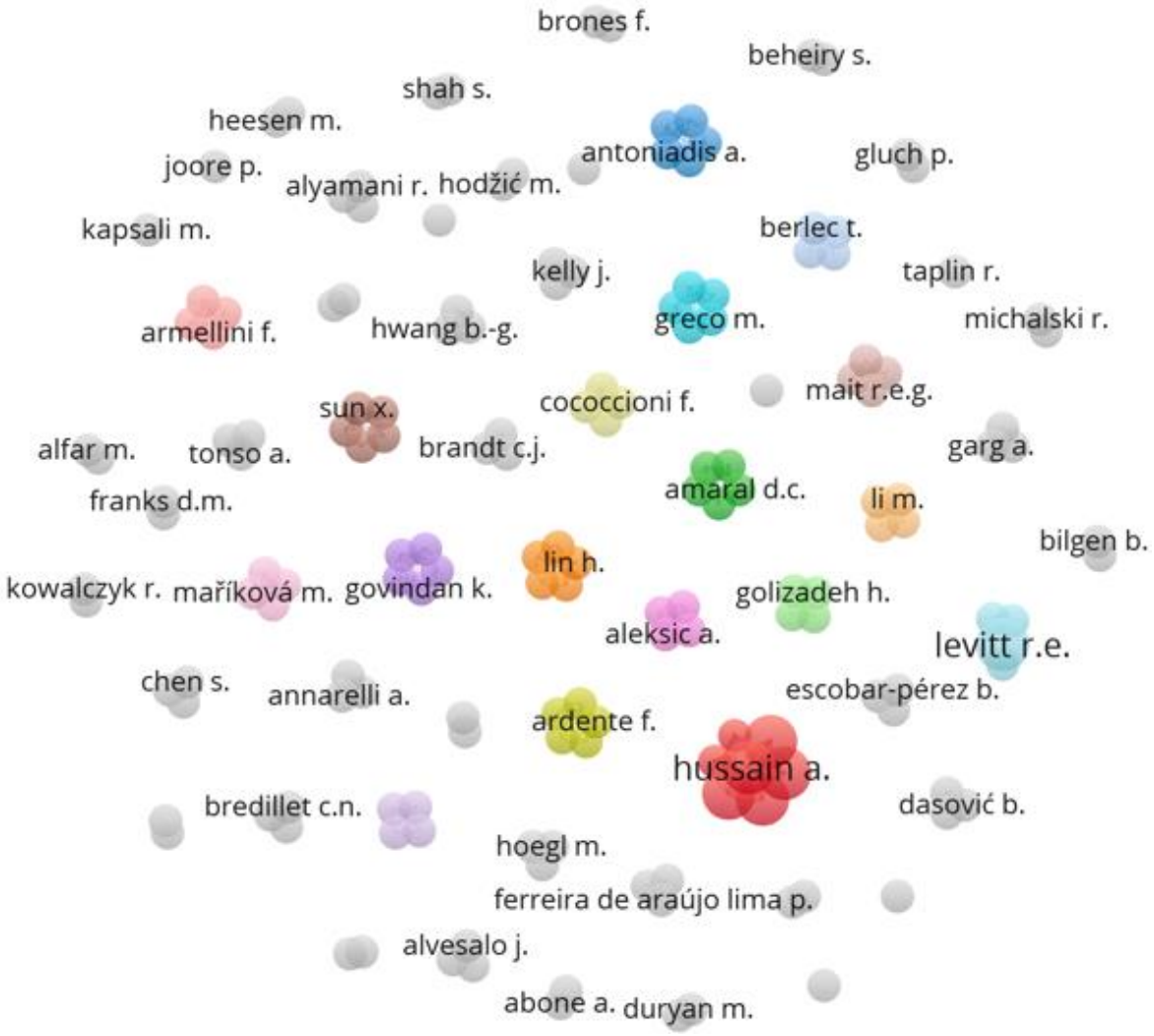

Figure 20 - Network visualization based on bibliographic data (co-authorship, authors)

4.2.3 Co-citation

For the co-citation network construction, the relationship between items was based on the number of times they were cited together. Only authors with a minimum of 10 citations were taken into consideration for analysis, which gave rise to a co-citation network with 40 items, with 6 clusters of co-cited authors, as can be seen in Figure 21.

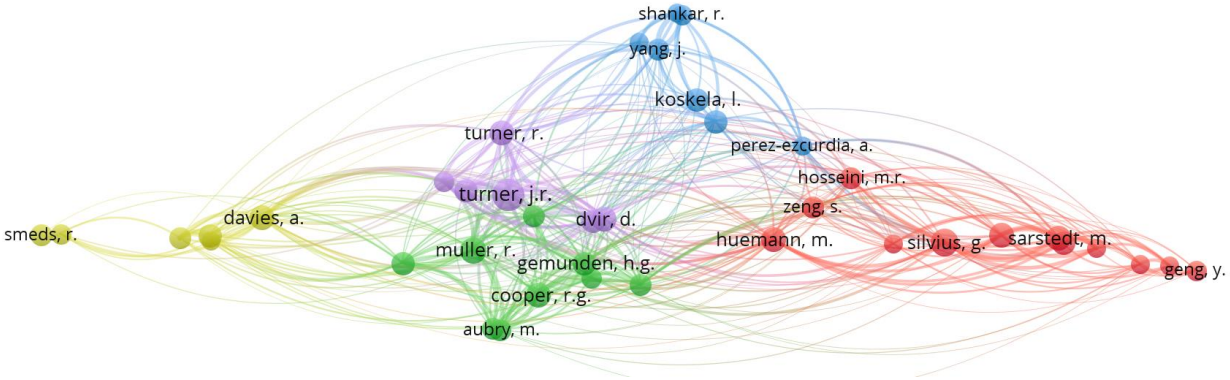

Figure 21 - Network visualization based on bibliographic data (co-citation, authors)

In this network, the most frequently cited authors were Turner, J.R. (27 citations), Silvius, G. (20 citations) and Muller, R. (19 citations), representing, also the co-cited authors with the highest link strength in the network. Other authors with a significant amount of citations and with a pronounced relationship are Cooper, R.G., Dvir, D., Hair, J.F., both with 17 citations.

5 CONCLUSIONS

The purpose of this research was to answer the question of *How to strengthen sustainability and innovation in the organizational environment throughout project management* in small *and medium-sized enterprises*? Furthermore, understanding the positive contributions in bringing sustainability and innovation to SMEs' PM, and seeking to comprehend how the topics that compose this theme are related. In this regard, this work aimed to achieve three research objectives: first, identifying the sustainable and innovative practices that can be implemented within SMEs' PM; second, perceiving the benefits obtained by those who implement innovation and sustainability into PM; third, develop a bibliometric study with the information available on the Scopus website within the scope of innovation, sustainability, SD, PM and SMEs, identifying the main metrics that help to understand how these topics are related.

This study provides an exploration of the literature. The achievement of the two first objectives occurs by highlighting key information related to PM and SMEs within the context of sustainability and innovation, based on a SLR considering the articles from Scopus and Web of Science databases. It was identified 86 sustainable practices, 166 innovative practices and 61 benefits.

The sustainable practices were divided into three categories, considering the elements of the TBL: Environmental performance (planet), Social performance (people) and Economic performance (profit).

The innovative practices were divided into 13 categories: Benchmarking and business intelligence; Marketing activities and identification of market needs to innovate; Idea generation techniques; Definition of innovation strategies, objectives and processes; Exploitation, exploration and knowledge management; Characteristics of the organization and resources for the development of innovation; Practices related to human talent management for innovation; Collaboration, strategic alliances, and open innovation; Project management; Implementation of changes or improvements in products and organizational processes; Use of technologies in the innovation process; Formal evaluation of the results of innovation and management of intellectual property; and Measuring the impact of innovation.

The achieved benefits were divided into 7 categories: Competitive advantage, Product/service, Process, Strategy, Knowledge, Organization and Employees.

In terms of number, most of the sustainable practices were related to environmental performance, 47%; most of the innovative practices were related to Project management and Implementation of changes or improvements in products and organizational processes, 17% and 15% respectively; and most of the benefits were related to Organization and Competitive advantages, 25% and 18% in this order.

The highest number of environmental practices identified is in accordance with Goh and Rowlinson (2015), who attest that the environmental dimension is given more attention than the other two, and with

Carruthers and Vanclay (2007) study, which attests to the low importance given to the management of social impacts compared to environmental impacts, which receive environmental management plans and standardization, such as the ISO 14001 regulation, implemented since 1996. Social responsibility was only addressed in ISO 26000 in December 2010, not being a standard, but only a guidance document (Franks & Vanclay, 2013).

The construction industry, due to its high relevance, consumption of natural resources and waste generation, has received much attention in relation to sustainability. On the other hand, although the construction industry is responsible for shaping the built environment that underpins all social and economic activity, the innovation performance of construction companies is very patchy and has received little attention in innovation research, if compared to other sectors such as manufacturing (Manley et al., 2009).

Innovation contributes significantly to economic growth, and many companies recognize the value of innovation, but many firms still don't know how to improve their performance through innovation, and even less with the insertion of innovation into PM.

SMEs sometimes resort to PM to deliver customized products to their clients, and to manage growth and innovation. However, it is very common that they sometimes employ professionals with other major functions than PM, not using recognized PM tools and techniques. A consequence of this is that they often become less competitive than large companies due to a lack of knowledge or non-application of practices and recognized PM tools and techniques.

In conclusion, the SLR helped to identify a large number of practices that can help SMEs to become more sustainable and innovative, contributing to SD through PM, and also that many benefits can be achieved through their use.

Regarding the bibliometric analysis, through which the third research objective was reached, it was possible to notice that among the most recurrent trends are: "project management", "sustainable development", "construction industry", "innovation" and "management practices", which are in fact emphasized within the SLR. The practices and the content discussed in the SLR are mostly related to the trends shown in the clusters from the co-occurrence network analysis. The trends related to the construction industry, even though it is not specifically included in the scope of this research, emerged due to their relevance and insertion in the research area of the respective works.

The network of authors responsible for writing the articles included in this analysis, that is, the collaboration network among the authors most concerned with this theme does not present great strength yet. However, the network of authors who were cited in the writing of the articles considered in this

analysis is strong and conclusive, indicating that the works of Turner, J.R., Silvius, G., Muller, R., among others, served as a major contribution to support the analyzed literature.

Some limitations during the development of this study can be considered. The fact that the bridge between the scientific fields of SD and PM has started only around 2010 and it is still being built characterizes a relatively new theme. The ease of finding information becomes even more restrictive when including SMEs subject to the theme of sustainability and innovation in PM, causing available literature scarcity even in the main and most comprehensive databases.

In addition to the limitations highlighted above, the present study also dealt with the fact that the sustainable environmental dimension is given more emphasis than the social and economic, and also the fact that the construction industry has received more attention in relation to sustainability than the other sectors due to its high consumption of natural resources, especially concerning the environmental aspect.

As innovation and sustainability are matters of interest to both academics, business community and world scenario, once the UN has defined 17 SDGs to confront economic, social and environmental challenges, including the promotion of sustainable economic growth and innovation, the research towards sustainability and innovation within business environment must be taken forward.

Based on the findings and contributions achieved by this work, some suggestions for future work can be taken into consideration. The range of practices found in this SLR is extensive, depending on the SMEs reality or the sectors of economic activity. It would be interesting to determine the key practices for each type of SME. Categorizing the practices, as has been done in this work, may help in this respect and function as an initial triage of which group of practices to be consulted, but it may require further study on this subject.

Another suggestion is a comparative analysis of the project life cycle with and without the application of sustainable and innovative practices to understand the impact at various levels of their use in the short, medium and long term; and also an additional analysis to clarify if implementing sustainability and innovation make sense from a cost-benefit point of view, once there are firms that question whether the initial investments and efforts are worthwhile and compensated by the benefits obtained.

Finally, a contribution towards innovation and SD, promoting the application of theoretical and scientific knowledge to the real context, would be the development of some methodology or manual that optimizes the choice of sustainable and innovative practices to be applied in their management, according to the particularities of the organizations and the surrounding environment, bringing a guide for the firms that are interested in undergoing this type of transformation.

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