

Article

Applying the PRiSM™ Methodology to Raise Awareness of the Importance of Using Sustainable Project Management Practices in Organizations

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Abstract: Sustainability has become crucial in today's business landscape. Customers, suppliers, partners, and investors are increasingly demanding that companies be aware of their impacts on the environment and society. Achieving sustainability in business operations, including social, economic, and environmental aspects, is one of the major challenges for companies today. Integrating sustainability into project management fosters the development of more sustainable and responsible projects, considering environmental, social, and economic aspects. This integration allows for benefits such as risk and operational cost reduction, strengthening of the company's reputation, and gaining stakeholders' trust. This study takes an exploratory approach, focusing on a pilot test to investigate how the PRiSM™ (Projects Integrating Sustainable Methods) methodology can be applied in a business context to assess the level of maturity of sustainable project management practices and thus raise awareness of the importance of these issues. PRiSM™ was developed by GPM® Global (Global Project Management, Lees Summit, MO, USA) in 2013 to help organizations integrate project processes with sustainable initiatives and it is based on the P5 Standard, which incorporates tangible tools and methods to manage the balance between finite resources, social responsibility, and delivery of sustainable project outcomes. Based on the PRiSM™ methodology and the P5 Standard (2nd Edition), a comprehensive questionnaire was developed under the Portuguese Project Management Observatory® to assist companies in assessing their performance in terms of sustainable practices, resulting in a sustainable maturity level. The questionnaire aimed to evaluate companies in four impact categories: product/process impacts, social impacts, economic impacts, and environmental impacts. The results, obtained from 30 respondents, indicated that the majority of organizations achieved medium-level ratings, with an overall average of 65%. However, some still showed unsatisfactory performance, with a minimum score of 14%, indicating there is still a long way to go for the full integration of sustainability. Based on participants' feedback, the study found that many recognized the importance of sustainability but were unaware of how to integrate sustainability practices into their project management activities, highlighting the importance of promoting education and raising awareness about sustainable project management practices. The findings, while based on a limited sample, provide valuable initial insights into the potential of PRiSM™ to foster sustainability in project management. This research underscores the need for further studies to expand and validate these preliminary conclusions.

Keywords: project management; GPM; P5; PRiSM; sustainability



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1. Introduction

Sustainability is increasingly becoming a societal concern and is experiencing continuous growth. As awareness of the impacts of human activities on the environment, society, and the economy rises, sustainability-related issues are gaining a central role in global discussions [1]. The adoption of sustainable practices is essential to ensuring a fair future and a habitable planet for both current and future generations [2].

Given the growing importance of sustainability, this study adopts an exploratory approach aimed at examining the PRiSM™ methodology, a recent approach in project management (PM) that aligns portfolios, programs, and projects with an organization's sustainability strategy. The goal was to apply this methodology in the business context to identify ways organizations can ensure sustainability in their projects [3].

Thus, the research question that this study aimed to address was as follows: “How can the PRiSM™ methodology be applied in a business context to raise awareness of the importance of using sustainable project management practices in organizations?”. And the objectives of the study, directly linked to the research question, were as follows:

- Analyze the PRiSM™ methodology in detail;
- Develop a questionnaire to help companies assess their level of sustainability maturity in project management;
- Identify opportunities for improving sustainability.

The research was conducted within the scope of the Portuguese Project Management Observatory (PPMO), a research group within the Portuguese Association of Project Management (APOGEP). The PPMO aims to promote the development and scientific knowledge of PM to improve best practices for professionals and organizations. It is a collaborative effort between APOGEP and academic institutions, targeting individuals involved in PM, including project managers, students, professors, professionals, and others interested in the field [4].

Sustainability represents one of the world's greatest challenges today. How can prosperity be developed without compromising the well-being of future generations? This concept has become increasingly associated with PM [2].

Current discussions among researchers highlight the growing intersection of sustainability, sustainable development, and PM. Stanitsas et al. (2021) [5] emphasize that PM is emerging as a key means to implement sustainability, driven by resource constraints, increasing stakeholder demands, and environmental, economic, and social requirements [6]. Vrchota et al. (2021) [7] argue that sustainability is integral to PM practices that uphold the future benefits of the Triple Bottom Line (TBL)—economic, environmental, and social factors. This approach focuses on managing all stages of a project, from planning to monitoring and control, ensuring the integration of economic, social, and environmental considerations in line with the ethical and transparent demands of stakeholders [5].

Silvius (2017) [8] notes the increasing importance of project-oriented economic activities, with sustainability now being a central concept in PM. PM has become an essential vehicle for implementing sustainability, protecting human and natural resources, and addressing externalities. Silvius and Schipper (2014) [9] argue that a more sustainable approach to PM can help achieve project goals more efficiently, minimizing waste.

Despite being a global trend, the relationship between sustainable PM and project success remains underexplored (Keshavarzian & Silvius, 2022) [10]. Achieving corporate sustainability by integrating social, economic, and environmental perspectives continues to be one of the most challenging goals for organizations and businesses worldwide [11]. This study aimed to contribute to the study of that relationship. However, due to the limited scope of data—30 participants from various sectors—the results should be considered as preliminary insights rather than generalizable conclusions.

2. Literature Review

This chapter brings together the main concepts related to the topics that will be addressed in this research and details them based on the results of the literature. It is divided into two sections inherent to the theme of this research: Project Management and Sustainability.

2.1. Project Management

Projects are temporary organizations through which companies and non-profit organizations introduce changes in their products, services, policies, business processes, assets, business models, and supply chains [12]. In addition, [3] argue that a project is unique, being a temporary activity designed to produce a unique product, service, or result and is temporary, having a defined start and end time and, therefore, a defined scope and resources, constituting a specific set of operations designed to achieve a singular objective. Thus, Carboni et al. [3] advocate that a project has the following characteristics:

- It can be simple, complicated, or complex;
- It requires a commitment of financial resources, non-financial resources, or both;
- It demands coordination and organization to ensure effective and efficient use of resources;
- It requires planning to have a defined period;
- It is unique;
- Its outcome should benefit one or more stakeholders.

On the other hand, PMI [13] advocates that PM can be defined as the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. This practice, representing a strategic competence for organizations, enables the connection of project outcomes to business objectives, thereby strengthening competitiveness in markets. Within the scope of PM, a project manager plays a crucial role as an individual responsible for leading the team to achieve the agreed objectives in the project. Their main responsibilities include developing clear and achievable project objectives, documenting project requirements, and managing constraints of finite resources to ensure successful completion. The evolution of PM focus over time reflects the dynamic trends in the business environment. Initially, PM was predominantly oriented towards technical delivery, aligning with the idea of delivering on time, within budget, and according to specifications [14]. However, as organizations faced more complex and dynamic challenges, there was a paradigm shift towards a more holistic and results-oriented approach. Authors like Kerzner [15] highlight this transition, pointing to the growing importance of considering not only technical aspects but also strategic and organizational elements that add value to the business. They emphasize the need for a more flexible and adaptive PM approach due to a business environment characterized by rapid changes and uncertainties. The evolution of PM focus is also evidenced by the increasing concern with stakeholder management and sustainability. Kerzner [15] argues that stakeholders play a crucial role in a project's success, as their expectations and needs must be considered throughout the project's lifecycle. Additionally, John Elkington identified a set of considerations in PM when he coined the term Triple Bottom Line (TBL) in his book *Cannibals with Forks* [3]. According to Elkington [3], companies should base their cost accounting on three different bottom lines:

Profit: Assessing whether the organization ensures competitive prosperity.

People: Evaluating whether the organization has social responsibility regarding its impact on individuals' quality of life.

Planet: Determining if the organization is environmentally responsible about its impact on natural ecosystems.

Thus, as reflected in Figure 1. PM has evolved from a focus on technical delivery to a more comprehensive, strategic, adaptive, and results-oriented approach, reflecting the increasing complexity of the modern business environment.



Figure 1. Evolution of the project management focus [3].

2.2. Sustainability

Contemporary sustainability emerges as an essential principle that permeates all facets of life and organizations. The pressing need to preserve natural resources and ensure the well-being of present and future generations has propelled a significant shift towards more responsible and conscious practices. A similar perspective is shared by the research of Brundtland [16], who argues that sustainability is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. As such, the growing prominence of sustainability, sustainable development (SD), and project management (PM) has made them focal points of discussion among researchers, reflecting their increasing importance in the agendas of individuals, organizations, and the global community [17].

This chapter explores the central role of sustainability in PM, emphasizing the importance of integrating environmental, social, and economic considerations in all phases of the project lifecycle.

Companies across various sectors seek changes due to global competitiveness and technological advancements, aiming to find differentiation in the market. Additionally, economic uncertainties lead to the development of sustainable and competitive methodological practices [18].

Climate change and environmental damage caused by corporate activities are increasingly discussed topics nowadays, and the consumer preference for more sustainable companies/products is on the rise. Factors such as climate change and biodiversity loss have become progressively more relevant, and the number of customers interested in these issues has increased [19]. Thus, there is a growing development of practices aimed at minimizing environmental impacts.

Moreover, M. Ullah et al. [20] provides additional insights by showing that the world and businesses currently face pressures that promote the adoption of sustainable corporate practices to ensure their future [20], and these practices are gaining attention in today's business world, incorporating sustainable aspects into the strategy and operations of industries that show a growing interest in sustainable human existence [21].

Practices along with ideas, skills, and available resources, such as tools, equipment, and artifacts, are considered fundamental for social responsibility [22]. Sustainable practices in the corporate area are classified under social responsibility and use the Triple Bottom Line (TBL) as a reference. Sustainable practices may relate to key precautions of sustainable development, such as waste and globalization, cultural dimensions, and others.

As environmental issues are increasingly considered relevant sources of strategic change [23], practices such as life cycle assessment, cleaner production, and eco-design (designing products minimizing their environmental impact throughout their lifecycle) have become acceptable and recurrent in companies [24]. The concept of corporate sustainability has been addressed by researchers in the field of organizational management [25], as well as the contribution of stakeholders in influencing sustainability practices.

Moreover, Hodges [26] argues that even a small shift towards sustainable practices can positively influence stakeholder satisfaction levels with the project and affect the overall success of the project.

Sustainability is a vital part of the project management profession, and companies seek to achieve competitiveness through sustainable practices in different markets or existing innovations [24]. A growing emphasis on SPM as a new school of thought in PM has sparked interest in studies on how to address sustainability in projects [27]. Sabiniet et al. [28] highlight that the relationship between sustainability and PM is being addressed in an increasing number of studies and publications.

In an increasingly sustainability-focused world, the impact of environmental, social, and governance (ESG) factors on PM is extremely relevant. Projects are now evaluated not only by their financial results but also by the environmental and social impacts they generate.

SPM integrates environmental, social, and economic aspects while managing projects [8]. Green Project Management (GPM[®]) is identified as one of the most important current trends, justified by the fact that everything performed in an organization either is or stems from a project [29]. Hence, the relationship between PM and sustainability is evident.

Sustainability as a field of study can offer new perspectives to PM, supporting project managers in their decisions regarding planning, management, and control of resources, considering economic, social, and environmental impacts not only in the project lifecycle but also in the asset's lifecycle and the products that asset produces [30].

According to a study, as per professional testimonies in PM, the impacts of ESG factors on PM result not only in internal gains for companies (reputation and financial results) but also in external positive impacts for society and the environment [31]. Integrating these factors into PM facilitates the development of more sustainable and responsible projects, contributing to long-term organizational growth by obtaining benefits such as risk reduction, operational cost reduction, and enhanced company reputation and stakeholder trust. Additionally, implementing ESG factors drives innovation and value creation in the medium and long term. This is further supported by the research of Wang et al. [32], which argues that combining sustainability with PM is the best way to achieve corporate success.

Transitioning to more sustainable business practices requires changing the products, services, business models, processes, policies, and resources of companies [33]. Sádaba et al. [34] assert that projects play a fundamental role in implementing these organizational changes and thus in the sustainable development of organizations and society. Similarly, Shah et al. [35] argue that adopting new ways of managing projects and integrating the concept of sustainability, has a positive global impact on various aspects of the organization. Hence, project managers have a responsibility to use sustainable practices in their daily work, striving to apply the most efficient and effective tools possible in their management functions [36]. According to the latest PM standards from the Project Management Institute (PMI, Upper Darby, PA, USA), International Organization for Standardization (ISO, Geneva, Switzerland), and the International Project Management Association (IPMA[®], Zurich, Switzerland), it is the responsibility of project managers to analyze and consider the social and environmental impacts of the projects they manage, leading to the conclusion that SPM is the new 'normal'. However, promoters and project managers still face many challenges in translating their organizations' sustainability strategies into concrete objectives and

actions in projects. Marcelino-Sádaba et al. [34] and Aarseth [37] claim that there is a lack of integration of sustainability and PM. The topic of sustainable development is still little mentioned in major PM guides [38], despite more recent versions framing the topic more prominently, and the lack of practical guidance on how to integrate sustainability concepts into PM methods is still significant. Barendsen et al. [39] argue that to increase overall awareness and incorporation of sustainability within a project, communication regarding sustainability should involve all members of the project team, even if they are not directly involved in technical tasks related to the topic. The author also asserts that communication processes regarding sustainability should begin in the early stages of the project, preferably in the planning phase. Carboni et al. [3] advocate that to operationalize the consideration of sustainability in PM, a sustainability impact analysis (SIA) should be conducted, which involves an approach to explore the economic, environmental, and social impacts resulting from proposals, strategies, and action plans, in the project initiation or planning phase. According to the authors, for a project to be considered sustainable, it must adhere to the principles advocated by GPM® for sustainable projects, including the following:

- Commitment and Responsibility;
- Ethics and Decision Making;
- Integration and Transparency;
- Principles and Values;
- Social and Ecological Equity;
- Economic Prosperity.

3. PRiSM™ Methodology

The PRiSM™ methodology is a project delivery methodology based on the P5 Standard, which incorporates tangible tools and methods to manage the balance between finite resources, social responsibility, and the delivery of 'green' project outcomes [3].

3.1. P5 Standard

The P5 Standard is a PM guideline aimed at aligning portfolios, programs, and projects with the organization's sustainability strategy. Its main purpose is to identify potential negative and positive impacts that can be analyzed to support informed decisions and effective resource allocation [3].

P5 determines that the impact of a project on sustainability should be considered throughout the life cycles of both the project's processes and the project's product. Thus, it proposes a holistic approach, from project conception to the final product [40].

Change is an imperative necessity, and projects are the primary tool to implement that change [3,41]. A recent study by GPM®, 'Insights on Sustainable Project Management', revealed that 96% of over a thousand surveyed executives believe that projects and PM are essential elements for sustainable development. Additionally, 100% of these executives state that project managers must understand the importance of sustainability for the success of their projects. Among project managers, 71% reported that the P5 Standard contributes to improving the sustainability of their projects, and among project managers actively using P5 in their roles, 95% admit to having been able to achieve greater sustainability benefits [14].

Thus, GPM® argues that in a world characterized by volatility, uncertainty, complexity, and ambiguity, sustainability should be a core focus of PM. For project managers to be recognized as professionals, GPM® advocates that they must actively embrace sustainability, and the P5 Standard is the basis for this change. Although not a methodology for creating a sustainable environment, it provides the fundamental principles for the PRiSM™ methodology approach, providing an ontology that identifies potential sustainability im-

pacts, including people, planet, prosperity, product, and process. Thus, P5 represents a comprehensive and integrated approach that helps manage the complexity of SPM.

3.2. Details of the PRiSM™ Methodology

The PRiSM™ methodology was developed by GPM® Global in 2013 to assist organizations in integrating project processes with sustainable initiatives to achieve business objectives and reduce negative environmental impact. It is a structured PM methodology that highlights sustainability areas and integrates them into the main traditional project stages, which, when understood and addressed effectively, facilitate the reduction in negative environmental impacts across all types of projects, maximizing opportunities to manage sustainability and finite resources. PRiSM™ establishes a framework based on ISO 21500, ISO 14001, ISO 26000, ISO 50001, and ISO 9001 standards, incorporating management best practices to answer the following question: “How do I apply sustainability to my projects?” [3].

Joel Carboni, President and Founder of Green Project Management and co-author of PRiSM™ concepts and guidelines, suggests that the methodology arose from concerns about how project processes were being conducted (GPM® Global). Carboni et al. [3] defend that many green projects cannot be considered environmentally responsible because they focus only on the final product and not on the processes leading up to its delivery, considering that traditional SPM is only based on TBL elements to develop projects. However, GPM® members believed that more elements should be included to integrate projects with corporate strategy, leading to the development of the PRiSM™ methodology as a new line of thinking [3]. Thus, PRiSM™ emerged as an innovative methodology that differs from traditional approaches due to its focus on a value maximization model that emphasizes a sustainable lifecycle of assets. Unlike traditional methods, the PRiSM™ methodology lifts projects to a strategic level, leveraging existing organizational systems to ensure benefits are realized comprehensively, horizontally, and vertically [41] With its primary focus on the sustainability of products and processes, PRiSM™ promotes an environment that encourages lasting positive impacts.

In essence, PRiSM™ is more than just a methodology; it is considered “a transformative force that sets the stage for projects to thrive while positively impacting the world we live in” [41,42].

The PRiSM™ methodology is based on a standard project life cycle aimed at enhancing sustainability in both activities and outcomes. This cycle includes the following five phases:

- Pre-Project Phase;
- Discovery Phase;
- Design Phase;
- Delivery Phase;
- Closure Phase.

By following the PRiSM life cycle and producing its key deliverables, P5 impacts can be identified, measured, and managed to achieve the desired benefits. A crucial aspect of each phase is that it concludes with a key decision regarding whether or not the project should proceed, taking into account the business case’s validity and the usefulness of the project’s outcomes [3].

For a more detailed analysis of the PRiSM Project Life Cycle, please refer to a previous publication on this topic, available in [17].

3.3. Advantages and Challenges of Applying the Methodology

3.3.1. Advantages

Through the PRiSM™ methodology, it is possible to measure the impact of a project and ensure its positive contribution to the strategic objectives of an organization, as well as to the UN SDGs [14]. This model is known for being effective in reducing project risk from an environmental, social, and economic perspective while enhancing the benefits obtained. The main difference compared to traditional approaches is that the PRiSM™ methodology integrates a value-maximization model focused on the asset's total life cycle, positioning projects in a more strategic focus by leveraging existing organizational systems. Thus, it ensures that benefits are realized across different areas (horizontal) and at various hierarchical levels (vertical), promoting a broader and more sustainable impact with attention directed towards the sustainability of processes and products [42]. The PRiSM™ methodology, with a five-phase approach and the integration of products and services, goes beyond the typical project life cycle. The goal is for the project team to develop a deeper and more detailed understanding of the defined objectives and to analyze and review them at the end of each phase [42,43].

3.3.2. Challenges

Despite the benefits that the implementation of the PRiSM™ methodology can bring to a project, other factors may pose challenges. Projects that begin to implement PRiSM methods may require more time in the planning phase, as more steps are included in the processes and additional elements need to be analyzed and monitored. Additionally, the company culture may also need to be adapted to become more sustainable and sensitive to environmental and social aspects, necessitating investment in team training [43]. For PRiSM to be successful in a project, it is essential to have the company's commitment and willingness to fully support sustainability. Moreover, the success of the methodology will also depend on the company's core strategy. If the strategy includes social and environmental practices, it is more likely that the project will succeed when adopting the methodology. In an organization with a sustainable focus, the implementation of the PRiSM™ methodology can be seen as a driver for the company to achieve positive results and stand out from competitors [43]. Therefore, the successful integration of the PRiSM™ methodology into a project requires a holistic approach that considers not only the technical aspects of the methodology but also the organizational culture, company strategy, and commitment to sustainability.

3.4. PRiSM™ Methodology Implementation

We also develop a state-of-the-art study to analyze and discuss the results and gaps of previous publications in which the PRiSM™ methodology has been implemented. For this, we used the Scopus search engine and searched for all publications that had "Projects integrating Sustainable Methods" in All fields, with no other restrictions of type of publication or dates. This search was performed on 3 January 2025, and only 11 documents were found, reinforcing our belief that the PRiSM™ methodology is not yet commonly used in practice, or at least there are very few publications about this methodology. We can observe in Figure 2 that the first two publications about this methodology appeared in 2015, 10 years ago, and 2023 was the year with more publications about the topic.

Table 1 shows the list of the documents obtained and includes the citation, title, and information about if the paper refers to an implementation of PRiSM or not, and also if the full text was available or not. We can observe that only 3 of the 11 papers refer to implementation of PRiSM [44–46]. The others are literature reviews, studies about the use of PRiSM to access sustainability in project management, or papers on other topics [17,47–53].

Table 1. Citation, title and relevant information about each paper.

Citation	Title	PRiSM Implementation	Full Text Available
(Abdelkhalik & Azmy, 2022) [44]	The Role of Project Management in the Success of Green Building Projects: Egypt as a Case Study	Yes.	No—only abstract available.
(Anthopoulos, 2016) [47]	A Flood Wave Disaster Recovery Model for Under Construction Dam Projects: Findings from Greece	No.	Yes.
(Apenko & Fomina, 2019) [48]	Analysis of the Maturity of Sustainable Project Management in Russian Enterprises in the Transition to the Digital Economy	No, just assessment.	Yes.
(Apenko et al., 2021) [45]	Implementation and Dissemination of Sustainable Development Principles: The Role of External Factors and the Digital Environment	Yes.	No—only abstract available.
(Bluszcz & Chabior, 2023) [46]	Modern Trends in Project Management—Selected Issues—Case Study	Yes.	No—only abstract available.
(Burlereaux et al., 2015) [49]	Sustainable project management: A whole program indeed!	No.	Yes.
(Fomina & Apenko, 2020) [50]	Sustainability management in Russia: Values, motives, and assessment	No, just assessment.	Yes.
(Glavič, 2015) [51]	Chemical and process industries beyond gross domestic product	No.	Yes.
(Marques et al., 2023) [17]	Sustainability in Project Management: PM ² versus PRiSM TM	No.	Yes.
(Smith et al., 2024) [52]	From Dimes to Deadlines: What Project Management Techniques Are Right for You?	No.	Yes.
(Toledo et al., 2023) [53]	Review of Literature Models That Address Sustainability in Project Management	No.	Yes.

Table 2 shows the most relevant results and gaps in the studies discovered. As referred to above, from the three documents that refer to the implementation of PRiSM, Abdelkhalik and Azmy [44] present practical examples of project implementation based on sustainable project management. Apenko et al. [45] focus on the dissemination of sustainability development principles in business cultures and management and go into detail about the processes needed for this in an organization. So the study focuses on the experience of implementing the principles of sustainable development in the practice of enterprise projects. As a result, the authors describe the impact of external factors and the digital environment on the dissemination of the sustainable development principles, as well as the diagnosis of sustainability practices in enterprises. The gap of this study is that only two cases were analyzed. Bluszcz and Chabior [46] present practical examples of project implementation based on sustainable project management, but no details were available due to the fact that the publication was not retrieved in full text, but it was possible to conclude based on the abstract that the focus is the stage of initiating a new project, in which it is required to perform a project impact analysis under the P5 Standard.

Table 2. Most relevant results and gaps of the studies found.

Citation	Results	Gaps
(Abdelkhalik & Azmy, 2022) [44]	The publication contains practical examples of project implementation based on sustainable project management.	Not identified in the abstract.
(Anthopoulos, 2016) [47]	Only speaks about PRISM in the literature review, with focus on risk in comparison with other methodologies and proposes a disaster recovery model.	Topic not directly relevant to our study.
(Apenko & Fomina, 2019) [48]	Method of assessing the level of maturity of sustainable project management of Russian enterprises, based on GPM Global standard (Carboni, González, Hodgkinson, 2013); 19 companies participated in the study; similar to our study.	Justification of the study: lack of consistency; emphasis in individual indicators; insufficient attention to institutional sustainability indicators; lack of a methodology for quantifying the level of maturity of sustainable project management. Gaps in the conclusions: findings require further reflection.
(Apenko et al., 2021) [45]	Focus on the dissemination of sustainability development principles in business cultures and management; processes in an organization; study on the experience of implementing the principles of sustainable development in the practice of enterprise projects; as a result, the authors describe the impact of external factors and the digital environment on the dissemination of the sustainable development principles, as well as the diagnosis of sustainability practices in enterprises.	Only two cases were analyzed.
(Bluszcz & Chabior, 2023) [46]	The publication contains practical examples of project implementation based on sustainable project management.	Not identified in the abstract.
(Burlereaux et al., 2015) [49]	Speaks about the management trends for the future: ethics, transversality, innovation, collaboration and interactivity with all the stakeholders.	Not identified and topic not directly relevant to our study.
(Fomina & Apenko, 2020) [50]	Assessment of social enterprises and business organizations in Russia: “average” maturity level of sustainability management.	Limitations: small and not balanced data frame; future research: larger number of participants from different regions of Russia or from different countries.
(Glavič, 2015) [51]	A critical review of sustainability measurement using methods, tools and indicators for CPI is presented.	Not identified and topic not directly relevant to our study.
(Marques et al., 2023) [17]	Theoretical contribution about the integration of sustainability principles into project management; compares PM ² and PRiSMTM.	Not an implementation perspective.
(Smith et al., 2024) [52]	Explores some of the existing project management techniques; investigates their strengths, weaknesses, opportunities, and threats; and details the industries and contract types in which they are typically utilized. Presents a PRiSM SWOT analysis.	PRiSM is just one technique in 16 analyzed.

Table 2. Cont.

Citation	Results	Gaps
(Toledo et al., 2023) [53]	Comparison of models in the literature that incorporate sustainability in project management, with an integrated model used as reference, mapping their points of similarity.	SDGs are not yet effectively disseminated; governments need to work more on public incentives to boost the actions of companies towards sustainable development; include a discipline related to sustainable project management in undergraduate and graduate courses; need to disseminate sustainable project management methodologies so that they are adopted as a standard in project management; priority and focus must be given to the inclusion/definition of sustainability as an area of knowledge in project management.

From the papers that do not focus on PRiSM implementation, the one more relevant is the work by Apenko and Fomina [48]. It reports a method of assessing the level of maturity of sustainable project management of Russian enterprises, based on the GPM Global standard [54] study is based on 19 companies, and it is similar to our study. The authors justify their study because of the lack of consistency of approaches to assessing sustainability indicators. Also, an emphasis in individual indicators and insufficient attention to institutional sustainability indicators are considered a gap. Finally, the lack of a methodology for quantifying the level of maturity of sustainable project management was also an identified gap. As for the gaps in the results obtained, the authors recognize that the findings require further reflection. Fomina and Apenko [50] also focus on the assessment of social enterprises and business organizations in Russia, which, according to the study, present an “average” maturity level of sustainability management. The study presents the limitation of having a small and unbalanced data frame, similarly to the limitation of our study, so they propose for future research to have a larger number of participants from different regions of Russia or from different countries.

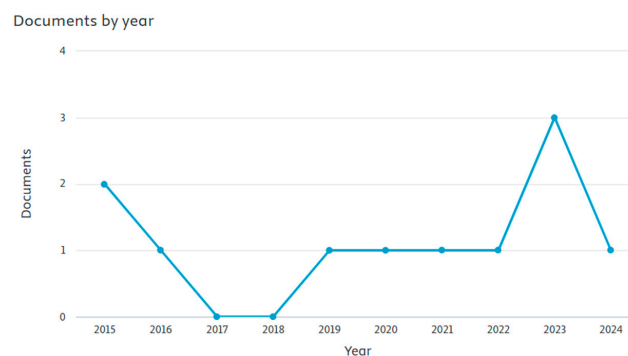


Figure 2. Documents by year of the Scopus search in all fields of PRiSM.

Other studies were considered less relevant to our study, but still refer to the PRiSM™ methodology [46,47,49,51].

In our previous study [17], we made a theoretical contribution regarding the integration of sustainability principles into project management by performing a comparison between the PM² and PRiSM™ methodologies. The authors of [53] also present a literature review with a comparison of models that incorporate sustainability in project management, with an integrated model used as reference, mapping their points of similarity, and as gaps, they maintain that SDGs are not yet effectively disseminated and that governments need to work more on public incentives to boost the actions of companies towards sustainable

development. They also suggest the inclusion of a discipline related to sustainable project management in undergraduate and graduate courses. The authors reinforce the need to disseminate sustainable project management methodologies so that they are adopted as a standard in project management and even the priority and focus that must be given to the inclusion and definition of sustainability as an area of knowledge in project management.

4. Research Methodology

This section presents the research methodology used in this study. After analyzing some of the methodologies proposed in the literature, considering the goal of the research, which was related to examining the applicability of the PRiSM™ methodology in the business context, our option was to adopt the approach known as the “Research Onion”, proposed by Mark Saunders, Philip Lewis, and Adrian Thornhill in the book “Research Methods for Business Students” [55]. The “Research Onion” is a visual metaphor that represents the various layers of complexity involved in research, starting from the outer layer of research philosophy to the inner layers of data collection and analysis methods, as illustrated in Figure 3, where the research choices are highlighted.

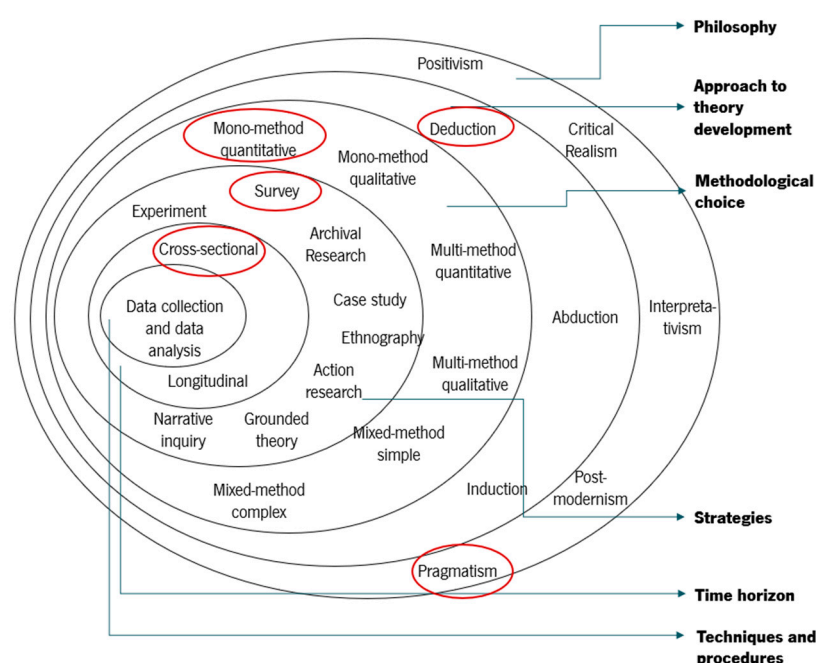


Figure 3. Research Onion and research choices. Adapted from [55].

The research choices were as follows:

- Research philosophy: Pragmatism (reflects an approach centered on answering the research question by a reflexive process of inquiry, striving to reconcile both objectivism and subjectivism, facts and values, and accurate and rigorous knowledge and different contextualized experiences, and giving more relevance to practical outcomes using methods that lead to credible results);
- Research approach: Deduction (involves analyzing publications, the literature, and existing methodologies related to the PRiSM™ methodology, allowing the study to be contextualized according to the existing body of knowledge);
- Research method: Simple method (involves collecting numerical data through questionnaires, focusing on objective measurement. While the numbers carry qualitative meaning based on individual interpretations, the approach remains quantitative given the emphasis on numerical data collection and analysis techniques for collecting and analyzing qualitative data, specifically focusing on the responses to the prepared questionnaire);

- Research strategy: Survey (involves collecting responses from participants through the administered questionnaire);
- Time horizon: Cross-sectional (covers a study conducted over 15 months, examining data and information at a specific point in time to provide a current representation of practices and perceptions related to sustainability in project management);
- Techniques and procedures for data collection and analysis: Questionnaire (developed based on the P5 Standard, aimed at evaluating the sustainability practices of the participating companies) and Excel and mathematical formulas and graphics for analyzing the results.

5. Questionnaire

Concerns about sustainability lead organizations to take responsibility for social impacts. Reducing negative impacts requires organizational change, in which projects play a fundamental role. Considering sustainability in PM is an important trend nowadays and requires tools to assess the sustainability of a project [40]. Thus, to study this topic further, a questionnaire was developed based on the P5 Sustainability Impact Assessment tool from GPM[®], an instrument that aims to define how to measure sustainability-related impacts in a project [54] to assess whether the organizations that participated in the study engage in sustainable practices in the development of their projects in the product and process, social, economic, and environmental areas.

5.1. Questionnaire Development

To develop the questionnaire, Microsoft Excel was first used to create tables organized by domains and subdomains, which were then incorporated into a Microsoft Word document where the questionnaire formatting was completed. Next, using LibreOffice (version 7.6.2.1), open-text fields were added to the document, where respondents were asked to enter the name of the organization they represented, their name, position, and email. A dropdown list was included for all questionnaire items, offering four options: “Null Option”—The respondent did not answer; “Option 0”—The organization/project does not implement the described measure; “Option 1”—The organization/project implements the described measure; and “N/A”—The described measure does not apply to the organization/project’s context. Upon completion, the questionnaire was exported to PDF format using Foxit PDF to be shared with participants, allowing editing only in the designated fields with input boxes.

Before the questionnaire was distributed, it underwent a thorough review and validation process carried out by the three authors in collaboration with two initial participants. These participants played a critical role in identifying potential issues and providing valuable feedback. Additionally, these participants timed the completion process, allowing the authors to estimate the average time required to complete it. This step ensured that the remaining respondents could be informed about the approximate time commitment, helping to set expectations and enhance their engagement with the study.

5.2. Questionnaire Structure

The questionnaire was organized into four sections, according to the types of impacts that company activities can cause, besides an introductory note (see Appendix A). These sections were designated as Product/Process Impacts (Appendix B), Social Impacts (Appendix C), Economic Impacts (Appendix D), and Environmental Impacts (Appendix E).

5.2.1. Product/Process Impacts

In this section, the questionnaire addressed issues related to the direct and indirect effects that the activities and outcomes of a project can have on people, the planet, and

prosperity because of decisions made regarding the product's characteristics and the associated PM practices. These issues are related to aspects such as Product Lifespan, Product Maintenance, Process Efficiency and Effectiveness, and Process Equity, as shown in Figure 4.

Product Impacts		Process (Project Management) Impacts		
Lifespan of Product	Servicing of Product	Effectiveness of Project Processes	Efficiency of Project Processes	Fairness of Project Processes

Figure 4. Product and process impacts [14].

5.2.2. Social Impacts

The social impacts segment focused on assessing how the activities and outcomes of the project affect people and communities. Questions related to Labor Practices and Decent Work, Society and Customers, Human Rights, and Ethical Behavior were addressed, as illustrated in Figure 5.

People (Social) Impacts			
Labor Practices and Decent Work	Society and Customers	Human Rights	Ethical Behavior
Employment and Staffing	Community Support	Non-Discrimination	Procurement Practices
Labor/Management Relations	Public Policy Compliance	Age-Appropriate Labor	Anti-Corruption
Project Health and Safety	Protection for Indigenous and Tribal Peoples	Voluntary Labor	Fair Competition
Training and Education	Customer Health and Safety		
Organizational Learning	Product and Service Labeling		
Diversity and Equal Opportunity	Market Communications and Advertising		
Local Competence Development	Customer Privacy		

Figure 5. Social impacts [14].

5.2.3. Economic Impacts

Throughout this section, the economic impacts that the activities and outcomes of a project can have on different stakeholders were explored, with the primary objective of this category being the maximization of positive returns for the greatest number of stakeholders. The questions were based on topics such as Business Case Analysis, Business Agility, and Economic Stimulation, as shown in Figure 6.

Prosperity (Economic) Impacts		
Business Case Analysis	Business Agility	Economic Stimulation
Modeling and Simulation	Flexibility/Optionality	Local Economic Impact
Present Value	Business Flexibility	Indirect Benefits
Direct Financial Benefits		
Return on Investment		
Benefit–Cost Ratio		
Internal Rate of Return		

Figure 6. Economic impacts [14].

5.2.4. Environmental Impacts

The purpose of the environmental impacts category was to assess the impacts that the activities and outcomes of a project have on ecosystems. In this section, as shown in Figure 7, the questions covered topics related to Transportation, Energy, Land, Air and Water, and Consumption.

Planet (Environmental) Impacts			
Transport	Energy	Land, Air, and Water	Consumption
Local Procurement	Energy Consumption	Biological Diversity	Recycling and Reuse
Digital Communication	CO2 Emissions	Water and Air Quality	Disposal
Traveling and Commuting	Clean Energy Return	Water Consumption	Contamination and Pollution
Logistics	Renewable Energy	Sanitary Water Displacement	Waste Generation

Figure 7. Environmental impacts [14].

5.3. Data Collection

To gather data for analysis, the questionnaire was sent to contacts within companies, and assistance was requested from the dissertation advisors to share the participation invitation email with their contacts. The invitation was also sent to the members of the PPMO. Responses to the questionnaire were received between 2 October 2023, and 17 January 2024, with a total of 30 responses collected during this period.

6. Presentation and Analysis of Results

This chapter explains how the data collected during the research were processed and analyzed to be transformed into information. It is essential for ensuring the quality and reliability of the results, detailing the steps involved in converting data into insights that address the research question. By providing a clear and detailed explanation of the data processing and analysis, this chapter offers a solid foundation for interpreting the results and for formulating recommendations and conclusions for the study.

6.1. Data Processing

After receiving the 30 questionnaires, FoxitPDF was used to export the collected responses in data source format. Next, the exported data source, which can be found in Appendix F, was integrated into Microsoft Excel for data processing. In this appendix, it is possible to view the responses from the 30 evaluated questionnaires across the 148 questions addressed. Subsequently, using Power Query, a tool available in Microsoft Excel 365 MSO (Version 2412 Build 16.0.18324.20092), the raw responses were imported and underwent a series of automations, enabling the data to be formatted appropriately for analysis through pivot tables.

6.2. Formulation of Calculations

To respond to the questionnaire questions, four possible options were given:

- “Null option”—The respondent did not answer;
- “Option 0”—The organization/project does not apply the described measure;
- “Option 1”—The organization/project applies the described measure;
- “N/A option”—The described measure does not apply to the context of the organization/project.

For determining the questionnaire scores, all the options impacted the percentage of the score.

As an example, and to explain how the responses were converted into a score that determined the classification at a level, we extracted the responses from one of the questionnaires related to the category of Product and Process Impacts, which contains 11 questions for product impacts and 4 for process impacts (see Figure 8).

PRODUCT AND PROCESS IMPACTS		
Product Impacts		Score
Lifespan of the Product	Evaluate the quantity and types of materials and chemicals used in the design and manufacture of physical items.	0 ☐
	Explore options for reuse, recovery, repurposing or recycling whenever possible.	1 ☐
	Consider product lifecycle costs (development, distribution, operation, and disposal).	1 ☐
	Apply design principles that support sustainability throughout the product lifecycle.	1 ☐
	Actively search for materials and products that do not harm people or the planet.	0 ☐
	Develop product designs that emit less CO2.	1 ☐
	Servicing of the Product	Review new technologies for their potential to make servicing activities more sustainable.
Avoid making unreasonable, misleading, or deceptive claims about the product's serviceability.		1 ☐
Make conscious choices about the energy required to service the product.		1 ☐
Design and build the product with servicing in mind.		NA ☐
Hold suppliers and their supply chains to the same standards.		1 ☐
Process Impacts		Score
Effectiveness and Efficiency of Processes	Seek to optimize the effectiveness and efficiency of the processes.	1 ☐
	Assess the effectiveness and efficiency of the processes against industry benchmarks and best-practice frameworks.	1 ☐
Fairness of Processes	Ensure transparency and openness.	1 ☐
	Be fair to customers, suppliers and other stakeholders at all times.	1 ☐

Figure 8. Example questionnaire—product/process impacts.

Product Impacts:

- “Yes” responses: 7;
- “No” responses: 2;
- “N/A or Null” responses: 2.

Formula used for calculation:

$$\% \text{ Score Iprod} = \frac{\text{No. yes answers}}{\text{No. yes, no \& NA answers}} \times 100 = \frac{7}{11} \times 100 = 64\% \quad (1)$$

Process Impacts:

- “Yes” responses: 4;
- “No” responses: 0;
- “N/A or Null” responses: 0.

Formula used for calculation:

$$\% \text{ Score Iproc} = \frac{\text{No. yes answers}}{\text{No. yes, no \& NA answers}} \times 100 = \frac{4}{4} \times 100 = 100\% \quad (2)$$

Thus, the weighted score for the category was obtained through the following formula, being classified at Level 4—Excellence at Corporate Level (70–89%).

Formula used for calculation:

$$\begin{aligned} \% \text{ Average I Prod \& Proc} &= \frac{\% \text{ score Iprod} + \% \text{ score Iproc}}{2} \times 100 \\ &= \frac{63.64\% + 100.00\%}{2} = 82\% \end{aligned} \quad (3)$$

Therefore, the demonstrated reasoning was expanded to the remaining impact categories, including social, economic, and environmental, resulting in an overall average of 75% for the questionnaire example at Level 4—Excellence at Corporate Level (70–89%) (refer to Section 5.2).

Formula used for calculation:

$$\begin{aligned} \% \text{ Average overall score} &= \frac{\text{Average \% I Prod \& Proc} + \text{Average \% I Score} + \% \text{ I Eco} + \text{Score \% I Amb}}{4} \times 100 \\ \% \text{ Average overall score} &= \frac{82\% + 64\% + 73\% + 79\%}{4} = 75\% \end{aligned} \quad (4)$$

6.3. Maturity Levels

The classification of data levels is an essential step in the data processing process. In this subsection, we outline the method through which data were categorized into different levels, establishing a fundamental organizational framework for subsequent analysis. This classification of levels was carried out based on predefined criteria, which were established after a careful review of the relevant literature and specific theoretical considerations for the study domain, ensuring accurate and reliable classification. The data were classified into a hierarchical structure of levels, with each level representing a specific range of values. This division was based on the article 'Business Sustainability Maturity Model' [56], which introduces a model for assessing corporate sustainability maturity, offering an innovative approach to help companies achieve sustainable development. The referenced Maturity Model is divided into five maturity levels: Level 1—Ad Hoc; Level 2—Planned in Isolation; Level 3—Managed with no Integration; Level 4—Excellence at Corporate Level; Level 5—High-Performance Sustainability Net.

6.3.1. Maturity Level 1—Ad Hoc

Sustainability is treated casually and reactively. According to Cagnin et al. [56], there is no clear strategy to address sustainability issues, and it is seen as an additional cost without established processes or controls to support its implementation. Partnerships are primarily selected based on cost reduction, and there is no organizational culture encouraging employee motivation toward sustainability, with minimal communication on the subject. Operations are managed in isolation, and there is no consistent approach to measuring or improving sustainability performance. In summary, sustainability is not a priority and is treated superficially and disconnected from the core operations of the company [56].

6.3.2. Maturity Level 2—Planned in Isolation

Compared to the previous level, there is a transition from reactive management to a more proactive approach in terms of sustainability. The direction and goals of sustainability are identified but not aligned with the main business objectives. Efforts to integrate sustainability into the company's operations are made, although limited. The costs of sustainability begin to be internalized and shared among processes and activities. Communication about sustainability is made, but in a casual and non-integrated manner, with much still to be done to fully integrate sustainability into the company's operations [56].

6.3.3. Maturity Level 3—Managed with No Integration

Sustainability is managed without being fully integrated into the core operations of the company. There is a balance between sustainability concerns, compliance, and costs, but it is still seen as a separate area. Sustainability begins to be integrated into business, but often it is still seen as a lower priority. In most cases, sustainability management is aimed at improving the company's image, with known goals and consistent criteria established.

Communication about sustainability is based on the company's objectives and its portfolio of competencies. Operations include sustainability management as a co-equal activity, with efforts initiated to integrate it more fully. This level represents an intermediate point in the sustainable maturity process, highlighting the importance of continuing to advance toward full integration of sustainability into the core operations of the company [56].

6.3.4. Maturity Level 4—Excellence at Corporate Level

Sustainability is a business priority, although not fully aligned with other objectives. Corporate leadership actively oversees sustainability, which is integrated into customer needs. Partnerships are selected based on socio-environmental impacts, and collaboration with stakeholders is essential. Communication about sustainability is integrated, and operations are planned and reviewed periodically, focusing on continuous improvement and socio-environmental responsibility. However, while this level demonstrates an advanced approach where sustainability is integrated into all aspects of the business, there is still room for improvement [56].

6.3.5. Maturity Level 5—High-Performance Sustainability Net

Sustainability is seen as a profit center and strategically implemented with a focus on continuous improvement. Competencies are selected to develop products and services innovatively and efficiently. Motivation is driven by meaning and job satisfaction, and communication about sustainability is integrated into the organizational culture. Operations reflect the company's values and its ethical and social responsibility. At this advanced level, companies are at the forefront of sustainability, demonstrating an exemplary commitment to sustainable practices [56].

6.3.6. Percentage per Level

As described earlier, the division of ratings into five sustainability levels was based on the article 'Business Sustainability Maturity Model' [56]. However, to define the score intervals corresponding to each level, an approach reflecting the complexity of the sustainability topic was adopted.

The distribution of intervals was structured to balance the breadth of the base with the precision of the top. As observed in Table 3, the percentage interval for the first two levels is 25%, representing companies with sustainable practices in the early stages that need room to progress. For the intermediate two levels, a 20% interval was assigned, indicating an increase in commitment to sustainable practices. The fifth level, with an interval of only 10%, reflects the difficulty in achieving higher standards, indicating the need for continuous commitment.

Table 3. Rating levels.

Classification	Percentage
Level 1—Ad Hoc	(0–24%)
Level 2—Planned in Isolation	(25–49%)
Level 3—Managed with no Integration	(50–69%)
Level 4—Excellence at Corporate Level	(70–89%)
Level 5—High-Performance Sustainability Net	(90–100%)

The division of percentage intervals was carefully chosen to be relevant in the context of the research, ensuring a realistic view of progress in sustainability and offering a balance between flexibility for companies in the early stages and rigor for those aiming for excellence.

This classification (Table 3) established a solid foundation for subsequent analysis, providing a clear and transparent organizational framework for the collected data.

6.4. Characterization of the Participants

This section presents the characterization of the sample according to three variables: gender, the sector of activity of the participating companies, and the role of the respondents. A total of 30 responses were obtained from a universe of 25 companies, including responses from three employees in two of the companies and two employees in another.

6.4.1. Sex

As illustrated in Figure 9, the sample of this study was characterized by an equitable distribution of participants by sex, with a participation rate of 50% male and 50% female. This equal division ensures a balanced representation of both sexes within the sample, providing a solid foundation for subsequent analyses and ensuring the relevance and validity of the obtained results.

No. of Participants by sex

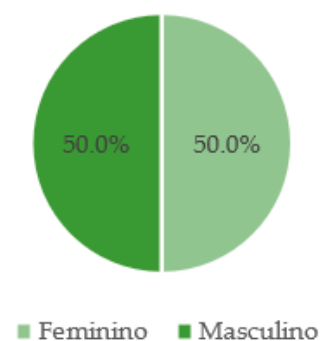


Figure 9. No. of participants by sex.

By achieving an equal participation of men and women in the sample, we can explore the research questions from a more comprehensive and inclusive perspective. This means that the analyses and interpretations of the results will be based on a broad and diverse sample, which strengthens the validity, reliability, and relevance of the obtained results.

6.4.2. Sector of Activity

To ensure a diverse and comprehensive representation, the questionnaire was sent to participants from companies in different sectors of activity. The multi-sectoral approach provided a holistic analysis of the responses, allowing access to a variety of perspectives and experiences. The inclusion of different sectors reflects the comprehensive nature of the study and enables an analysis across distinct industries.

Participants' company sectors include the following (see Figure 10):

- Agriculture and Agribusiness;
- Sports and Entertainment;
- Manufacturing and Production;
- Health and Wellness;
- Consulting and Advisory Services;
- Technology and Innovation;
- Tourism and Hospitality;
- Commerce.

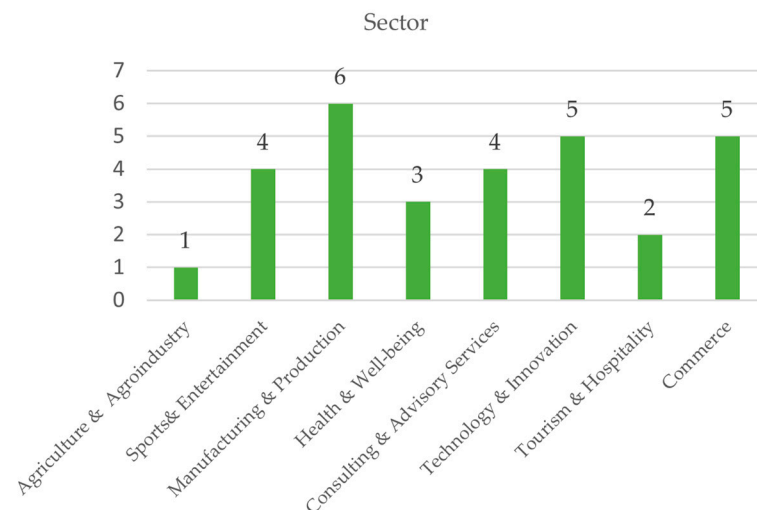


Figure 10. Participants' companies—distribution by sector of activity.

6.4.3. Roles of Participants

The research included contributions from specialists in various fields. As shown in Figure 11, the participants' roles include managers, project managers, production directors, and planning technician, among others. This variety of roles reflects the breadth and depth of the perspectives considered in this study, ensuring a comprehensive and multifaceted view on the subject and highlighting the importance and interdisciplinary impact of sustainable practices in various organizational spheres, reinforcing the relevance and scope of the study conducted.

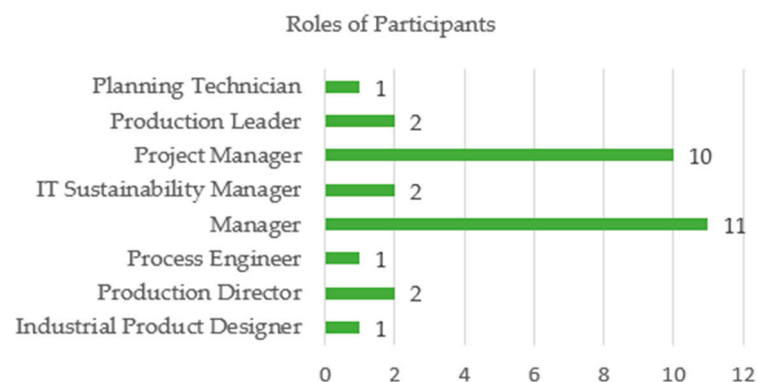


Figure 11. Roles of participants.

6.5. Analysis of Results

Within this section, an analysis of the obtained results will be presented, specifically the classification of the response rate by category, the classification of the sustainability level by category, the classification of the percentage by subcategory, and the classification of the level by the questionnaire.

6.5.1. Classification of the Response Rate by Category

To better understand the suitability of the questionnaire for the various industries represented by the participants' companies, it was crucial to analyze the percentage of responses in each category. The questionnaire included options for "N/A" (the described measure is not applicable to the organization's/project's context) and "Blank/Null" (the respondent did not answer), acknowledging the possibility of variations in business practices and contexts.

After processing the collected data and a detailed analysis of the resulting information, which was compiled in Table 4, it is possible to verify that the response rate using the “N/A” option is similar across the four impact categories, with an overall average of 23%, indicating potential challenges in the applicability of some measures to different business contexts.

Table 4. Analysis of responses by category.

Category	% NA	% BLANK	% RESP
Product and Process Impacts	22%	4%	75%
Social Impacts	24%	0%	76%
Economic Impacts	22%	2%	76%
Environmental Impacts	23%	2%	75%
Average	23%	2%	76%

Considering blank responses, the rate is low, with an overall average of 2%, indicating significant interest in the issues addressed in the questionnaire.

As for the responses with options “0” and “1”, there is little variation between the different impact categories, resulting in a relatively uniform percentage of responses, with a weighted average of 75%.

6.5.2. Classification of the Sustainability Level by Category

The analysis of the results presented in Table 5, illustrated below, reveals an interesting trend in the responses obtained concerning the different impact categories. The data show that, in each category, Level 4—Excellence at Corporate Level—had the highest number of responses, suggesting that many companies have a medium to high level of sustainable practices in specific areas. However, when considering the overall evaluation of the level achieved at the end of the questionnaire, Level 3—Managed with no Integration—received the most responses. This discrepancy raises an interesting reflection on the nature of corporate sustainability. While many companies demonstrate excellence in specific areas, their overall sustainable performance may be affected by lesser integration of sustainability in other areas.

Table 5. Category analysis by level.

Classification	Product/Process Impacts	Social Impacts	Economic Impacts	Environmental Impacts
Level 1—Ad Hoc	4	1	3	3
Level 2—Planned in Isolation	2	4	6	8
Level 3—Managed with no Integration	7	7	1	6
Level 4—Excellence at Corporate Level	10	15	12	12
Level 5—High-Performance Sustainability Net	7	3	8	1
Totals	30	30	30	30

This interpretation suggests that sustainable excellence is not only about excellence in isolated areas but also about integration and coherence across all corporate areas. Companies aiming to achieve a higher level of sustainability should not only focus on specific areas but should integrate sustainable practices holistically across all aspects of their operations [57].

From an analysis of Table 5, it can be concluded that although most companies demonstrate a medium level of sustainable performance, there are a significant proportion of companies in Levels 1 and 2 across all categories, indicating a lack of planning and strategy in sustainability. The results obtained in Levels 3 and 4 show that some companies are adopting sustainable measures, but without complete integration throughout the organization, highlighting the need for greater integration and coordination of sustainable practices in all corporate operations in the future.

Figures 12–15 show the number of responses by level, according to each impact category.

As observed in the chart in Figure 12, regarding product/process impacts, most responses were classified in the top 3 levels, with the highest number of responses being classified at Level 4. However, four questionnaires were classified at Level 1, indicating a very limited integration of sustainability in terms of product/process by these companies.

Regarding social impacts, as presented in Figure 13, we can conclude based on the responses that 15 questionnaires were classified at Level 4, indicating a medium/high level of sustainability performance. However, five responses were classified at Levels 1 and 2, highlighting a significant need for greater integration of sustainable practices in these companies.

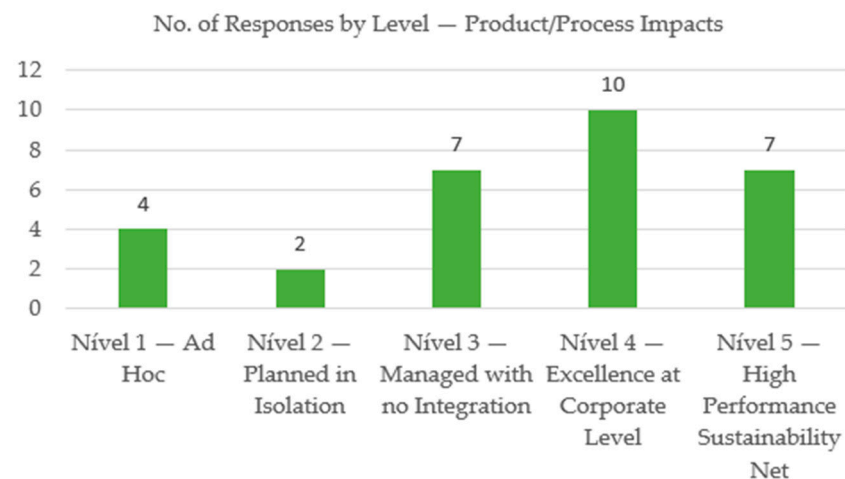


Figure 12. No. of responses by level—product/process impacts.

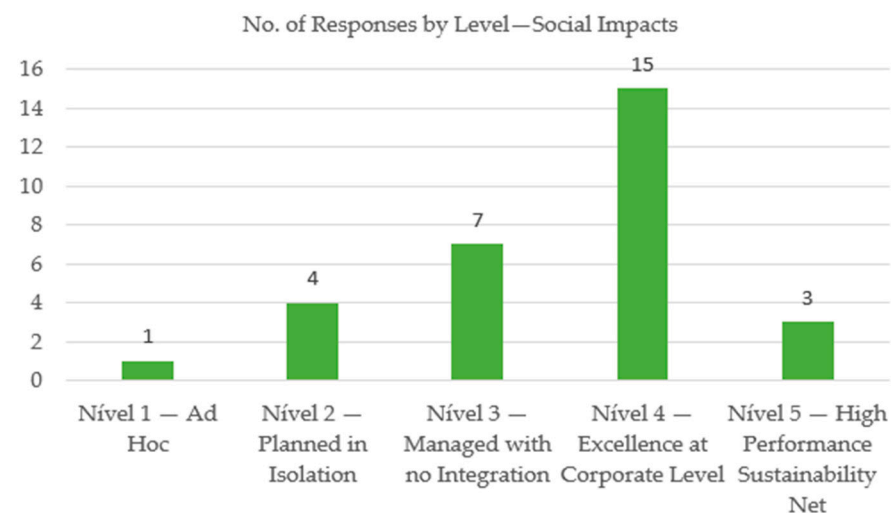


Figure 13. No. of responses by level—social impacts.

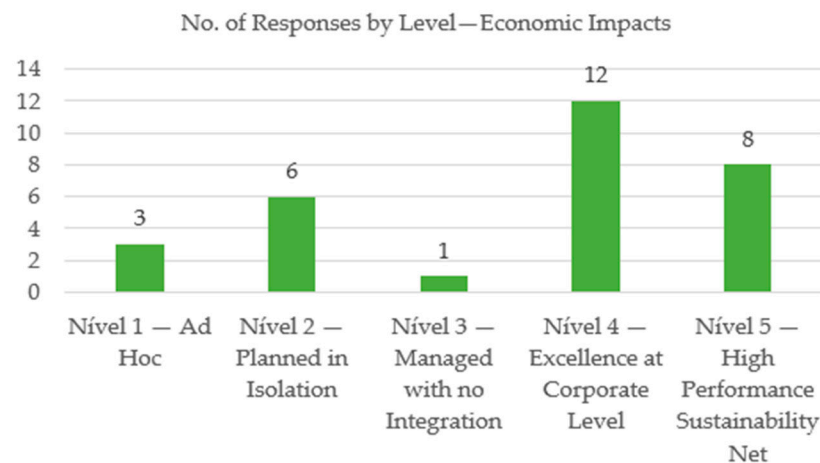


Figure 14. No. of responses by level—economic impacts.

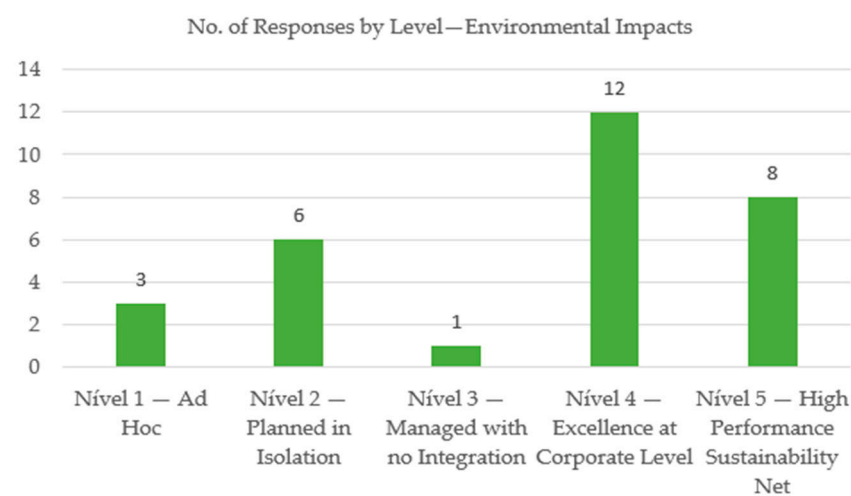


Figure 15. No. of responses by level—environmental impacts.

Regarding economic impacts, as exhibited in Figure 14, it is possible to conclude that most of the obtained questionnaires were classified at Levels 4 and 5, suggesting well-integrated and consolidated sustainability practices. However, 10 out of the 30 questionnaires were classified in the first three levels, reflecting a greater need for the integration of sustainable practices related to economic aspects by these companies.

Concerning environmental impacts, as perceived in Figure 15 and also noted in the other categories, the level with the highest number of results is Level 4. However, in this category as well, a considerable number of responses were classified in the first three levels, indicating a need for greater integration of sustainable practices related to environmental issues within the respective companies. In this category, only one questionnaire was classified at Level 5.

6.5.3. Classification of the Percentage by Subcategory

Through the analysis of Tables 6–9, it is possible to identify which impact subcategories show, in general terms, more and less sustainable practices among the evaluated companies, according to each impact category.

Table 6. Responses by subcategory—product/process impacts.

Product and Process Impacts	% Score
Product Impacts	56%
Process Impacts	76%
Average	66%

Table 7. Responses by subcategory—social impacts.

Social Impacts	% Score
Labor Practices and Decent Work	76%
Society and Customers	61%
Human Rights	68%
Ethical Behavior	71%
Average	69%

Table 8. Responses by subcategory—economic impacts.

Economic Impacts	% Score
Project Viability	79%
Business Agility	59%
Local Economic Impact	63%
Average	67%

Table 9. Responses by subcategory—environmental impacts.

Environmental Impacts	% Score
Transport	57%
Energy	51%
Land, Air and Water	55%
Consumption	68%
Average	58%

As can be observed in Table 6, in the category of product/process impacts, the percentage was higher for process impacts than for product impacts. This suggests that the participating companies demonstrate more sustainable practices in terms of process efficiency, effectiveness, and equity compared to issues related to the product's lifespan and maintenance.

Concerning social impacts, it can be observed in Table 7 that the subcategory achieving the highest percentage for sustainable practices was labor practices and decent work, with 76.27%. On the other hand, the subcategory of society and customers had the lowest score, at 61.43%, suggesting that there is a need to improve interaction and positive impact on communities and customers.

As perceived from Table 8, regarding the subcategories of economic impacts, the subcategory achieving the highest score was project viability, with 79%. This result suggests that participants consider their projects economically viable, reflecting good financial sustainability. On the other hand, the lowest score, at 59%, was in the business agility subcategory, indicating a significant need to improve the ability to respond to and adapt to market changes to ensure long-term sustainability.

As observed in Table 9, regarding the subcategories of environmental impacts, the subcategory achieving the highest score was consumption, with 68%. The lowest score, at 51%, was in the energy subcategory, indicating that there is significant room for improvement in practices related to the use of sustainable energy.

6.5.4. Classification of the Level by Questionnaire

The detailed analysis of the data presented in Table 10 provides important insights into the performance of the evaluated companies concerning sustainability and corporate practices. Based on the completed questionnaires, several significant observations can be highlighted.

In general terms, the average score of the evaluated companies was 65%, corresponding to Level 3—Managed with no Integration—reflecting a moderate performance, which indicates an initial commitment to sustainability and corporate responsibility. However, there is a need for gradual progress towards more robust and sustainable practices.

There is also considerable variation in the scores obtained, ranging from 14% to 91%. This variation reflects different approaches and levels of implementation of sustainable practices among the participating companies. Additionally, five questionnaires were identified with ratings in Levels 1 and 2, indicating a minimal commitment to sustainable practices.

Table 10. Ranking of the level achieved by responses.

Questionnaires	Average	Score
Questionnaire 1	73%	Level 4—Excellence at Corporate Level
Questionnaire 2	88%	Level 4—Excellence at Corporate Level
Questionnaire 3	73%	Level 4—Excellence at Corporate Level
Questionnaire 4	29%	Level 2—Planned in Isolation
Questionnaire 5	71%	Level 4—Excellence at Corporate Level
Questionnaire 6	84%	Level 4—Excellence at Corporate Level
Questionnaire 7	79%	Level 4—Excellence at Corporate Level
Questionnaire 8	73%	Level 4—Excellence at Corporate Level
Questionnaire 9	69%	Level 3—Managed with no Integration
Questionnaire 10	67%	Level 3—Managed with no Integration
Questionnaire 11	78%	Level 4—Excellence at Corporate Level
Questionnaire 12	82%	Level 4—Excellence at Corporate Level
Questionnaire 13	80%	Level 4—Excellence at Corporate Level
Questionnaire 14	58%	Level 3—Managed with no Integration
Questionnaire 15	67%	Level 3—Managed with no Integration
Questionnaire 16	54%	Level 3—Managed with no Integration
Questionnaire 17	77%	Level 4—Excellence at Corporate Level
Questionnaire 18	50%	Level 3—Managed with no Integration
Questionnaire 19	42%	Level 2—Planned in Isolation
Questionnaire 20	14%	Level 1—Ad Hoc
Questionnaire 21	74%	Level 4—Excellence at Corporate Level
Questionnaire 22	22%	Level 1—Ad Hoc
Questionnaire 23	60%	Level 3—Managed with no Integration
Questionnaire 24	75%	Level 4—Excellence at Corporate Level
Questionnaire 25	84%	Level 4—Excellence at Corporate Level
Questionnaire 26	86%	Level 4—Excellence at Corporate Level
Questionnaire 27	14%	Level 1—Ad Hoc
Questionnaire 28	65%	Level 3—Managed with no Integration
Questionnaire 29	91%	Level 5—High-Performance Sustainability Net
Questionnaire 30	70%	Level 3—Managed with no Integration
Overall Average	65%	Level 3—Managed with no Integration

7. Conclusions, Limitations and Future Work

The final chapter of this paper presents the conclusions and reflects on the limitations that may have influenced the research. It is essential for consolidating what has been analyzed throughout the study, highlighting potential implications for practice and theory, and suggesting opportunities for future research.

7.1. Conclusions

Sustainability in project management has been receiving increasing attention, with organizations recognizing the importance of incorporating sustainable practices into their projects and academics making more studies about the theme. However, integrating sustainability presents challenges, such as the development of methods, tools, and techniques to assess sustainability at the project level [58].

Carvalho and Rabechini Jr [59] claim that there is an urgent need to develop practical tools to support project managers in analyzing the sustainability impact of their projects and knowledge to understand how to apply these tools in PM processes. It is crucial to develop a more holistic and coherent view of projects concerning their suitability for the environment and society since it is necessary to develop sustainable parameters that can be applied to most projects [12].

Thus, the main objective of this research was to develop a questionnaire to help companies assess whether they are effectively applying sustainable corporate practices in their daily activities and to understand how they can improve, with the aim of raising awareness about the importance of using sustainable project management practices in organizations.

Through the analysis of the data obtained from the responses to the questionnaire, it is possible to conclude that most of the responses collected are generally concentrated at the medium levels of classification (Level 3 and Level 4), indicating that most companies participating in the study already adopt sustainability support measures in their daily activities. However, these measures are still applied moderately, highlighting the need to develop more integrated and mature practices to achieve full integration and the highest performance in all areas.

Through participants' feedback and the results obtained from the responses to the questionnaire, the study revealed that many organizations have already implemented sustainability measures in their daily activities, but in a moderate way. This indicates, confirmed by the participants' feedback, that there is difficulty in applying more integrated and mature practices. This lack of awareness highlights a further gap in understanding how daily practices can contribute to sustainability efforts, reinforcing the importance of educating organizations and project managers on the broad applicability of sustainability principles. The questionnaire proved to be an effective tool in raising project managers' awareness of how they can incorporate more sustainable practices into their daily tasks, as it prompted them to reflect on their current practices while answering the questions.

Nevertheless, despite the general average being classified at Level 3, it was observed that some companies still achieve very low percentages, indicating the urgent need for the integration of sustainable practices in these companies. The research also revealed that several companies reach high levels in certain areas but show less favorable results in others, negatively impacting the overall result, emphasizing the importance of a comprehensive and integrated approach in all impact areas.

By following the PRiSM™ life cycle and producing its main deliverables, the P5 impacts can be identified, measured, and managed, and the expected benefits can be delivered. This methodology can be applied to any organization in any sector, and although some elements of PRiSM™ may be similar to other approaches, the P5 Impact Assessment and the Sustainability Management Plan are crucial differentiators. By combining these two components with proven traditional PM practices, the methodology helps ensure that projects deliver sustainable results in a sustainable manner [3].

However, it is important to note that this study is exploratory in nature, and the results are based on a pilot test with a limited sample of 30 participants from various sectors. As such, the findings should be considered as preliminary insights. The small, non-representative sample limits the scope and relevance of the results, and further studies

with larger and more diverse samples are necessary to validate these conclusions and expand the understanding of sustainability practices in project management.

7.2. Limitations and Future Work

Finally, it is important to highlight some limitations of this work and make some suggestions for future research. After the data gathering was performed, a new version of the GPM practice guide was released [60], so it would be interesting to update the questionnaire developed considering this new version. Moreover, the number of respondents was limited, so the results cannot be generalized, although the main goal was to demonstrate how the assessment could be performed, and that can be replicated in other organizations. Furthermore, a considerable rate of blank responses or selections of “N/A” was observed, particularly in the “Environmental Impacts” category. This observation suggests the need to tailor the questionnaire to the diverse realities of companies to improve data collection and ensure a richer analysis.

Thus, in future studies, increasing the number of respondents and diversifying the sample to include organizations from various sectors, sizes, and geographical regions is recommended. Expanding participation will not only enhance the robustness of the results but also enable more reliable conclusions. Additionally, adapting the questionnaire to companies’ distinct realities will lead to identifying patterns and trends relevant to advancing research in sustainability within project management. Investigating how organizational culture, leadership commitment, and employee attitudes shape the adoption of PRiSM™ methodologies is also relevant for future studies. Lastly, it would be interesting to conduct a follow-up study to track changes in sustainability maturity over time, highlighting the effectiveness of PRiSM™ in fostering improvement.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Questionnaire | Introductory Note



Sustainability Questionnaire

Description			
Organization Name			
Name:		Function:	
Email:		Date:	

The present questionnaire, based on The GPM P5TM Standard for Sustainability in Project Management, aims to assess the level of sustainable maturity of organizations/projects in the product/ process, social, economic and environmental domains. To respond, please choose one of the following options:

- Option 0 - If the organization/project does not apply the described measure
- Option 1 - If the organization/project applies the described measure
- Option NA - If the described measure does not apply to the organization/project context

After completing and sending the questionnaire, an assessment of the maturity of your organization will be made, taking into account your responses, and advantages of applying more sustainable measures will be highlighted. Organization and respondent data will be kept confidential.

Thank you very much for your participation. Your contribution is essential to our study.

Appendix B. Questionnaire | Product and Process Impacts

PRODUCT AND PROCESS IMPACTS

Product Impacts		Score
Lifespan of the Product	Evaluate the quantity and types of materials and chemicals used in the design and manufacture of physical items.	
	Explore options for reuse, recovery, repurposing or recycling whenever possible.	
	Consider product lifecycle costs (development, distribution, operation, and disposal).	
	Apply design principles that support sustainability throughout the product lifecycle.	
	Actively search for materials and products that do not harm people or the planet.	
	Develop product designs that emit less CO2.	
Servicing of the Product	Review new technologies for their potential to make servicing activities more sustainable.	
	Avoid making unreasonable, misleading, or deceptive claims about the product's serviceability.	
	Make conscious choices about the energy required to service the product.	
	Design and build the product with servicing in mind.	
	Hold suppliers and their supply chains to the same standards.	
Process Impacts		Score
Effectiveness and Efficiency of Processes	Seek to optimize the effectiveness and efficiency of the processes.	
	Assess the effectiveness and efficiency of the processes against industry benchmarks and best-practice frameworks.	
Fairness of Processes	Ensure transparency and openness.	
	Be fair to customers, suppliers and other stakeholders at all times.	

Appendix C. Questionnaire | Social Impacts

SOCIAL IMPACTS

Labor Practices and Decent Work		Score
Personnel Hiring and Selection	Pay livable wages with equal pay for equal work.	
	Engage staff using appropriate employment classifications (part-time or full-time, employee or contractor, paid or volunteer).	
	Use appropriate employment conditions including provisions for healthcare, holiday and parental care, fair dismissal, and maintenance of a healthy work-life balance.	
Employee/Management Relations	Recognize and support both legal and human rights for everyone involved in the project.	
	Define and implement approaches for addressing disputes.	
Health and Safety at Work	Identify and comply with any relevant health and safety laws and regulations.	
	Identify and evaluate options for controlling hazards.	
	Develop plans to protect workers during emergencies and nonroutine activities.	
	Review new technologies for their potential to be more protective, more reliable, or less costly.	
	Minimize the impact of the product on the health and safety of all involved.	
Training and Education	Identify skills required for the project.	
	Identify skills gaps and development needs of project team members.	
	Support and encourage project team members to undertake training and development.	
	Coach and mentor project team members to build competence.	
Organizational Learning	Incorporate lessons learned from past projects.	
	Capture lessons learned and share them throughout the organization.	
	Engage with stakeholders during the project to promote organizational learning.	
	Share lessons learned outside the organization whenever possible.	
Diversity and Equal Opportunities	Provide equal opportunity for all based on skill.	
	Show zero tolerance for bias based on age, gender, ethnicity, and other aspects of diversity.	
	Leverage the project team members' skills and experience in solving problems.	
Development of Local Skills	Take into account the abilities of local and indigenous people for project resource planning.	
	Use local labor when possible.	
	Leverage local practices and culture to improve efficiency.	
	Incorporate local employment targets in supplier contracts.	

SOCIAL IMPACTS

Society and Clients		Score
Community Support	Engage affected community representatives in discussions about the project.	
	Be open and honest about the project's effects on the community.	
Public Policies / Compliance	Identify and comply with the relevant laws and regulations of the jurisdictions in which the project operates.	
	Report regularly to relevant stakeholders on compliance-related matters.	
Protection of Indigenous and Tribal Populations	Prevent any action which might deprive indigenous and tribal peoples of their cultural values or ethnic identities.	
	Prevent any action which might dispossess indigenous and tribal peoples of their lands or resources.	
	Prevent any form of forced population transfer which might violate or undermine any of their rights.	
	Prevent any form of communication that promotes or incites racial or ethnic discrimination.	
	Seek opportunities to incorporate relevant aspects of the cultures and customs of affected indigenous and tribal peoples into the project's activities and results.	
Customer Health and Safety	Identify and comply with relevant health and safety laws and regulations.	
	Identify and comply with relevant product safety standards.	
	Act to minimize any negative effects of the project's results.	
Labeling of Products and Services	Treat accurate and correct labeling as a mandatory requirement.	
	Hold suppliers and their supply chains to the same level of product and service labeling standards.	
Commercial Communications and Advertising	Publicize the project's support for sustainability.	
	Avoid making unreasonable, misleading, or deceptive claims about the project's activities or results.	
	Correct any misinformation as quickly as possible.	
Customer Privacy	Identify and comply with all relevant laws and regulations (e.g., GDPR in Europe).	
	Ensure that safeguards are in place to protect customer information from unauthorized access.	
	Collect customer information only where necessary.	
	Use customer information only for its intended purpose and in accordance with the agreed terms of collection.	

SOCIAL IMPACTS

Human Rights		Score
Non-Discrimination	Enforce zero tolerance for discriminatory bias of any kind.	
	Avoid discriminatory bias when making decisions.	
	Actively work to maintain a positive work environment free of fear and harassment.	
	Compensate staff based on skill	
	Provide equal opportunity for all based on skill.	
	Hold suppliers and their supply chains to the same standards.	
Appropriate Working Age	Provide support for the ILO Minimum Age Convention.	
	Ensure that all workers are at or above the minimum age required by law.	
	Prevent children from being put into situations that might harm their health or general well-being.	
	Protect the human rights, including the right to an education, of any child workers.	
	Hold suppliers and their supply chains to the same standards.	
Volunteer Work	Provide support for the ILO Abolition of Forced Labour Convention.	
	Use only voluntary workers.	
	Report any observed incidents of forced or compulsory labor to relevant government agencies, non-governmental watchdogs, or both.	
	Hold suppliers and their supply chains to the same standards.	
Ethical Behavior		Score
Procurement Practices	Consider sustainability in all procurement decisions.	
	Ensure timely and fair payment of suppliers.	
	Hold suppliers and their supply chains to the same standards.	
Anti-Corruption	Identify and comply with any relevant laws and regulations.	
	Prohibit all forms of bribery whether they take place directly or through third parties.	
	Prohibit team members from soliciting, arranging, or accepting bribes intended for their benefit.	
	Provide protections for whistleblowers.	
Fair Competition	Refuse to participate in collusive contracting activities such as bid-rigging.	
	Refuse to participate in price-fixing agreements.	
	Hold suppliers and their supply chains to the same standards.	

Appendix D. Questionnaire | Economic Impacts

ECONOMICAL IMPACTS

Business Agility		Score
Flexibility/Optionality	Recognize that changes are inevitable in most projects and plan accordingly.	
	Look for opportunities to adjust requirements to achieve a higher degree of sustainability.	
	Apply value analysis or similar techniques to meet requirements without sacrificing sustainability.	
Business Flexibility	Focus on expected benefits.	
	Look for creative ideas to generate additional benefits.	
Business Case Analysis	Consider the effect of the Present Value, Direct Financial Benefits, Return on Investment, Benefit-Cost Ratio and Internal Rate of Return.	
	Ensure that benefits can actually be measured and realized by the sponsoring organization(s).	
	Ensure that benefits and costs are both measured over the same periods.	
	Understand that expected benefits are forecasts, not guarantees, and that they may be realized over many years.	
	Account for the possible effects of inflation, deflation, and exchange rate variances.	
Economic Stimulation		Score
Local Economic Impact	Consider the local community as a key stakeholder.	
	Identify opportunities to support the local economy.	
	Procure goods and services locally whenever possible.	
Indirect Benefits	Regularly review the project context for additional costs and benefits.	
	Regularly review the project context for additional risks and opportunities.	

Appendix E. Questionnaire | Environmental Impacts

ENVIRONMENTAL IMPACTS

Transport		Score
Local Procurement	Actively search for local suppliers.	
	Give preference to local suppliers whenever possible.	
Digital Communication	Seek to minimize the amount of paper used for project communications.	
	Make use of digital communication technology such as video conferencing, cloud-based meetings, and online collaboration tools whenever possible.	
Traveling and Commuting	Allow project team members to work remotely or flexibly whenever possible.	
	Encourage the use of commuting options such as mass transit, ride-sharing, and bicycles.	
	Consider the use of non-standard work hours and four day weeks.	
Logistics	Use bulk purchasing arrangements to reduce the frequency of shipping.	
	Favor local suppliers to minimize air pollution, traffic congestion, and CO2 emissions.	
	Design packaging to allow for reuse, recovery, repurposing, or recycling.	
Energy		Score
Energy Consumption	Consider product lifecycle costs (development, distribution, operation, and disposal).	
	Use energy-efficient supplies and materials whenever possible.	
	Prioritize the use of renewable energy.	
	Apply design principles that prioritize energy efficiency.	
CO2 Emissions	Manage the carbon footprint of both the project activities and the product produced.	
	Source alternative energy solutions.	
	Develop product designs that emit less CO2.	
	Seek to offset CO2 where residual CO2 emissions occur.	
Clean Energy Return	Seek opportunities to generate clean energy as part of the project.	
	Make conscious choices about energy use to support the project.	
	Advocate for the use of renewable energy.	

ENVIRONMENTAL IMPACTS

Land, Air and Water		Score
Biological Diversity	Identify and comply with any relevant laws and regulations.	
	Work to achieve a net positive impact (NPI) on biodiversity by ensuring that any negative impacts from the project are outweighed by biodiversity gains from conservation projects in the same region.	
	Hold suppliers and their supply chains to the same standards.	
Air and Water Quality	Identify and comply with any relevant laws and regulations.	
	Seek to minimize impacts on the local water table and connecting bodies of water.	
Water Consumption	Avoid using water unnecessarily.	
	Minimize the use of bottled water.	
	Minimize the use of drinking water where non-potable water could be used.	
	Implement water-saving technologies whenever possible.	
	Capture and use rainwater when possible.	
	Use greywater when possible.	
Sanitary Displacement of Water	Ensure that water runoff will be handled appropriately and sanitarly.	
Consumption		Score
Recycling and Reuse	Make use of recycled and responsibly sourced supplies and materials whenever possible.	
	Promote recycling and reuse within the project.	
	Ensure that its recycling and reuse practices have a net positive impact on the environment.	
	Look for opportunities to participate in circular economy programs.	
Disposal	Consider the whole life cost, including the cost of disposal, as part of the business case.	
	Ensure that all unneeded items are disposed of responsibly	
	Explore options for reuse and recycling of the product and its component materials.	
	Design and build the project's product with disposal in mind.	
Contamination and Pollution	Identify and comply with any relevant laws and regulations.	
	Actively search for materials and products that do not contaminate or pollute.	
Waste Generation	Actively seek ways to optimize the use of available resources.	
	Promote recycling and reuse within the project.	
	Identify potential markets for any waste generated by the project.	
	Design packaging and other product features to minimize waste.	

Appendix F. Questionnaire Results

Company	Quest.	IP_Prod_01	IP_Prod_02	IP_Prod_03	IP_Prod_04	IP_Prod_05	IP_Prod_06	IP_Prod_07	IP_Prod_08	IP_Prod_09	IP_Prod_10	IP_Prod_11	IP_Proc_01	IP_Proc_02	IP_Proc_03	IP_Proc_04
C1	Q1	NA	1	1	1	NA	NA	1	1	NA	1	NA	1	1	1	1
C2	Q2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C3	Q3	1	1	1	0	1	0	1	1	0	1	0	1	1	1	1
C4	Q4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C5	Q5	NA	1	1	1	NA	1	1	1	1	1	1	1	1	NA	NA
C6	Q6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6	Q7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6	Q8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C7	Q9															
C8	Q10	1	1	1	1	1	NA	NA	1	1	1	0	NA	0	1	1
C9	Q11	NA	1	1	0	NA	NA	1	1	1	1	1	1	1	1	1
C10	Q12	1	1	0	0	1	1	1	1	1	0	1	1	1	1	1
C10	Q13	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1
C11	Q14	NA	1	1	NA	0	0	0	1	1	1	1	1	0	1	1
C12	Q15	1	1	1	1	1	NA	NA	1	1	1	0	NA	0	1	1
C13	Q16	NA	1	NA	NA	1	NA	NA	NA	NA	1	1	1	1	1	1
C14	Q17	1	1	NA	1	1	1	1	1	1	1	1	1	1	1	1
C15	Q18	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
C16	Q19	0	0	NA	NA	0	NA	NA	NA	NA	NA	0	1	1	1	1
C17	Q20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C18	Q21	0	1	1	1	0	0	NA	NA	1	NA	1	1	1	1	1
C18	Q22	1	0	0	0	0	0	0	NA	0	0	0	1	1	0	0
C19	Q23	NA	1	1	NA	NA	NA	1	NA	NA	NA	1	NA	NA	1	1
C18	Q24	0	1	1	1	0	1	NA	1	1	NA	1	1	1	1	1
C20	Q25	1	1	1	NA	1	NA	1	1	1	0	1	1	1	1	1
C21	Q26	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
C22	Q27	0	NA	NA	0	1	0	NA	1	NA	0	1	0	0	NA	NA
C23	Q28	NA	1	1	NA	1	NA	NA	1	NA	NA	1	1	1	1	1
C24	Q29	NA	1	1	1	1	1	1	1	1	NA	1	1	1	1	1
C25	Q30	1	1	1	1	1	1	1	1	1	1	0	NA	0	1	1

Company	Quest.	IS_PL_01	IS_PL_02	IS_PL_03	IS_PL_04	IS_PL_05	IS_PL_06	IS_PL_07	IS_PL_08	IS_PL_09	IS_PL_10	IS_PL_11	IS_PL_12	IS_PL_13	IS_PL_14	IS_PL_15	IS_PL_16	IS_PL_17	IS_PL_18	IS_PL_19	IS_PL_20	IS_PL_21	IS_PL_22	IS_PL_23	IS_PL_24	IS_PL_25
C1	Q1	1	1	1	1	1	1	NA	1	1	NA	1	1	1	1	1	1	1	1	1	1	1	NA	1	NA	0
C2	Q2	1	1	1	1	1	1	1	1	1	0	1	0	0	0	1	1	1	1	0	1	1	0	0	0	0
C3	Q3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	NA	0	0	0
C4	Q4	1	1	1	1	1	1	NA	1	1	NA	1	1	1	1	NA	NA	1	1	1	1	1	NA	NA	NA	NA
C5	Q5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	1	NA
C6	Q6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6	Q7	NA	NA	NA	NA	NA	1	1	NA	1	1	1	1	1	1	1	1	1	1	NA	1	1	NA	NA	NA	NA
C6	Q8	1	1	1	1	1	1	1	NA	1	1	1	1	1	1	1	1	1	0	1	1	1	NA	NA	NA	NA
C7	Q9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C8	Q10	1	1	1	1	NA	1	1	1	1	1	1	1	NA	NA	1	1	1	1	1	1	1	0	1	NA	0
C9	Q11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0
C10	Q12	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1
C10	Q13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0
C11	Q14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	NA	NA	1	NA	NA	0	NA	NA	NA	1	1	0	0
C12	Q15	1	1	1	1	NA	1	1	1	1	1	1	1	NA	NA	1	1	1	1	1	1	1	0	1	NA	0
C13	Q16	1	1	1	1	1	1	1	1	NA	1	1	1	1	1	1	1	NA	NA	1	1	1	NA	1	NA	NA
C14	Q17	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C15	Q18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C16	Q19	1	1	NA	1	NA	1	NA	1	1	NA	1	1	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	1	NA
C17	Q20	1	1	1	1	1	1	1	NA	NA	NA	1	1	1	1	NA	1	NA	NA	1	1	1	NA	NA	NA	NA
C18	Q21	1	1	1	1	1	1	1	1	1	NA	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0
C18	Q22	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	0
C19	Q23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	0	NA	NA
C18	Q24	1	1	1	1	1	1	1	1	1	NA	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0
C20	Q25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C21	Q26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C22	Q27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C23	Q28	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1
C24	Q29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C25	Q30	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1	1	1	1	0	1	NA	1

Company	Quest.	IS_SC_01	IS_SC_02	IS_SC_03	IS_SC_04	IS_SC_05	IS_SC_06	IS_SC_07	IS_SC_08	IS_SC_09	IS_SC_10	IS_SC_11	IS_SC_12	IS_SC_13	IS_SC_14	IS_SC_15	IS_SC_16	IS_SC_17	IS_SC_18	IS_SC_19	IS_SC_20	IS_SC_21
C1	Q1	0	1	1	1	NA	NA	NA	1	NA	1	1	1	1	NA	NA	1	1	1	1	1	1
C2	Q2	0	1	1	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1
C3	Q3	0	0	1	1	NA	NA	NA	1	NA	1	1	1	1	1	0	1	1	1	1	1	1
C4	Q4	NA	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	1	1	1
C5	Q5	NA	NA	1	1	NA	NA	NA	NA	NA	1	1	1	NA	NA	1	1	1	1	1	1	1
C6	Q6	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
C6	Q7	NA	NA	1	1	NA	NA	NA	1	NA	1	1	1	1	1	1	1	1	1	1	1	1
C6	Q8	NA	NA	1	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1
C7	Q9	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	1	1	1	1	1	1
C8	Q10	1	1	1	1	NA	NA	NA	1	NA	1	1	1	1	1	1	1	1	1	NA	1	1
C9	Q11	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	0	0	1	1	NA	NA	NA	NA
C10	Q12	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
C10	Q13	0	1	1	1	NA	NA	NA	1	NA	1	1	1	1	1	1	1	1	1	1	1	1
C11	Q14	0	1	1	NA	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
C12	Q15	1	1	1	1	NA	NA	NA	1	NA	1	1	1	1	1	1	1	1	1	NA	1	1
C13	Q16	NA	NA	1	1	NA	NA	NA	1	NA	1	1	1	1	1	NA	1	1	1	1	1	1
C14	Q17	NA	NA	1	1	NA	NA	NA	NA	NA	1	1	1	NA	NA	1	1	1	NA	1	1	1
C15	Q18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C16	Q19	NA	NA	NA	NA	NA	NA	NA	1	NA	1	NA	NA	1	0	0	NA	NA	NA	NA	NA	NA
C17	Q20	NA	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	NA	1
C18	Q21	0	0	1	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1
C18	Q22	0	0	1	1	0	0	0	0	0	1	1	1	1	0	1	0	0	1	1	1	1
C19	Q23	0	1	1	1	NA	NA	NA	NA	NA	1	1	1	1	NA	NA	NA	NA	NA	1	NA	NA
C18	Q24	0	0	1	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1
C20	Q25	NA	NA	NA	1	NA	NA	NA	1	NA	1	1	1	1	1	1	1	1	1	1	1	1
C21	Q26	1	1	1	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	NA	1	NA	NA
C22	Q27	1	1	1	1	0	0	0	0	0	NA	NA	NA	NA	NA	0	1	1	NA	NA	NA	NA
C23	Q28	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	NA	1	1
C24	Q29	NA	1	1	1	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C25	Q30	1	1	1	1	NA	NA	NA	1	NA	1	1	1	1	1	1	1	1	1	NA	1	1

Company	Quest.	IS_DH_01	IS_DH_02	IS_DH_03	IS_DH_04	IS_DH_05	IS_DH_06	IS_DH_07	IS_DH_08	IS_DH_09	IS_DH_10	IS_DH_11	IS_DH_12	IS_DH_13	IS_DH_14	IS_DH_15	IS_CE_01	IS_CE_02	IS_CE_03	IS_CE_04	IS_CE_05	IS_CE_06	IS_CE_07	IS_CE_08	IS_CE_09	IS_CE_10
C1	C2	1	1	1	1	1	NA	1	1	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	NA
C2	C3	1	1	1	0	1	1	1	1	1	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C3	C4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0
C4	C5	1	1	1	1	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	NA	1	1	1
C5	C6	1	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6	C7	1	1	1	1	1	1	1	1	1	1	1	NA	NA	NA	NA	1	1	1	1	1	1	1	NA	NA	1
C7	C8	1	1	1	NA	NA	1	NA	NA	NA	NA	NA	NA	NA	1	NA	1	NA	NA	1	1	1	1	1	1	1
C8	C9	1	1	1	NA	1	NA	1	1	1	NA	1	NA	NA	1	1	NA	NA	NA	1	1	1	1	1	1	1
C9	C10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C10	C11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C11	C12	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1
C12	C13	1	1	1	1	1	1	NA	NA	NA	1	1	NA	NA	0	NA	NA	1	1	NA	1	NA	NA	NA	NA	NA
C13	C14	1	1	1	NA	NA	NA	1	NA	NA	NA	1	NA	NA	NA	NA	1	1	1	1	1	NA	NA	1	0	1
C14	C15	1	1	1	1	1	1	NA	1	1	1	1	1	NA	0	NA	NA	1	NA	1	NA	NA	NA	NA	NA	NA
C15	C16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	1	1	1	1	0
C16	C17	1	1	1	1	1	0	1	1	1	NA	0	NA	NA	NA	NA	NA	NA	1	0	NA	NA	NA	NA	NA	1
C17	C18	1	1	1	1	1	NA	1	1	1	1	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	1	NA	NA	NA
C18	C19	1	1	1	1	1	0	1	1	1	1	0	NA	NA	NA	NA	NA	1	NA	1	1	1	1	1	1	1
C19	C20	1	1	1	0	1	0	1	1	NA	NA	0	NA	NA	NA	NA	0	0	0	1	1	1	0	NA	NA	NA
C20	C21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C21	C22	1	1	1	1	1	NA	0	1	1	1	0	1	1	1	0	1	1	0	1	1	1	1	1	1	0
C22	C23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
C23	C24	1	1	1	0	0	1	NA	1	1	1	NA	NA	1	1	0	1	1	1	1	1	1	0	1	1	1
C24	C25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	NA
C25	C30	1	1	1	1	1	NA	NA	1	1	1	NA	NA	0	NA	NA	1	NA	1	NA	1	NA	NA	NA	NA	NA

[illegible]

City	Quest.	IA_E_01	IA_E_02	IA_E_03	IA_E_04	IA_E_05	IA_E_06	IA_E_07	IA_E_08	IA_E_09	IA_E_10	IA_E_11	IA_TAA_01	IA_TAA_02	IA_TAA_03	IA_TAA_04	IA_TAA_05	IA_TAA_06	IA_TAA_07	IA_TAA_08	IA_TAA_09	IA_TAA_10	IA_TAA_11	IA_TAA_12
C1	Q01	1	1	NA	1	NA	NA	NA	NA	NA	1	1	1	NA	NA	1	NA	1	1	1	1	0	0	1
C2	Q02	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
C3	Q03	1	0	0	0	1	1	0	0	1	0	1	1	0	0	1	1	1	0	0	0	0	1	1
C4	Q04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	NA	1	NA	NA	NA
C5	Q05	1	1	NA	1	1	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA	1	1	1	1	NA	NA	NA
C6	Q06	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C7	Q07	1	1	NA	1	1	1	1	1	1	1	1	1	NA	NA	1	NA	1	1	1	1	NA	NA	NA
C8	Q08	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1	NA	1	1	1	1	1	NA	NA
C9	Q09	1	1	1	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C10	Q10	1	1	NA	1	NA	NA	NA	NA	0	0	1	NA	NA	NA	1	1	1	0	1	NA	0	0	1
C11	Q11	1	1	NA	1	1	NA	NA	NA	NA	1	1	1	1	0	1	1	1	1	1	1	NA	1	1
C12	Q12	0	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	0	1	1	0	0	1
C13	Q13	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1
C14	Q14	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA
C15	Q15	1	1	NA	1	NA	NA	NA	NA	0	0	1	NA	NA	NA	1	1	1	0	1	NA	0	0	1
C16	Q16	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	NA	NA	NA	1	1	1	NA	NA	1	1
C17	Q17	1	1	1	1	0	1	1	1	0	1	1	0	0	0	1	0	NA	NA	NA	NA	1	1	1
C18	Q18	0	1	1	NA	0	1	NA	0	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	NA	1
C19	Q19	NA	NA	NA	NA	NA	1	NA	NA	1	1	1	1	1	0	1	1	1	NA	1	1	0	0	NA
C20	Q20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C21	Q21	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1
C22	Q22	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1
C23	Q23	1	1	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1
C24	Q24	1	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	NA	NA	1
C25	Q25	1	1	0	0	0	1	0	0	NA	1	NA	1	1	1	1	NA	1	1	1	1	NA	NA	1
C26	Q26	NA	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C27	Q27	NA	NA	NA	NA	NA	NA	1	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	NA
C28	Q28	0	1	NA	0	NA	NA	NA	NA	NA	0	NA	1	1	1	1	1	1	0	1	1	0	1	0
C29	Q29	1	1	1	1	1	1	NA	NA	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
C30	Q30	1	1	NA	1	NA	NA	NA	NA	0	0	1	NA	NA	NA	1	1	1	0	1	NA	0	0	1

Company	Quest.	IA_C_01	IA_C_02	IA_C_03	IA_C_04	IA_C_05	IA_C_06	IA_C_07	IA_C_08	IA_C_09	IA_C_10	IA_C_11	IA_C_12	IA_C_13	IA_C_14
C1	Q1	1	1	1	1	1	1	NA	NA	1	NA	1	NA	NA	NA
C2	Q2	1	1	1	1	1	1	1	1	1	1	1	1	1	NA
C3	Q3	1	1	0	1	1	1	1	1	1	1	1	0	1	1
C4	Q4	1	1	1	NA	NA	1	1	NA	1	1	1	1	NA	NA
C5	Q5	1	1	1	1	1	1	1	1	1	1	NA	1	NA	1
C6	Q6	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C6	Q7	1	1	1	NA	NA	1	1	1	1	1	1	1	1	1
C6	Q8	1	1	1	NA	NA	1	1	1	1	1	1	1	1	1
C7	Q9	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C8	Q10	1	1	1	NA	1	1	1	1	1	1	1	1	1	1
C9	Q11	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C10	Q12	1	1	1	1	0	0	1	0	1	1	1	1	0	1
C10	Q13	1	1	0	1	0	0	1	0	1	0	0	1	1	1
C11	Q14	0	1	0	0	0	0	1	0	NA	0	1	1	0	0
C12	Q15	1	1	1	NA	1	1	1	1	1	1	1	1	1	1
C13	Q16	1	1	1	0	1	1	1	NA	1	1	NA	NA	NA	NA
C14	Q17	0	0	0	0	0	0	0	0	1	1	0	0	0	NA
C15	Q18	NA	1	1	1	1	0	NA	NA	1	NA	0	1	0	0
C16	Q19	0	0	0	1	NA	0	NA	NA	NA	1	0	1	0	NA
C17	Q20	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C18	Q21	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C18	Q22														
C19	Q23	1	1	1	NA	1	1	NA	1	1	1	1	1	1	1
C18	Q24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C20	Q25	1	1	1	NA	1	1	1	1	1	1	1	1	1	1
C21	Q26	1	1	1	0	0	1	NA	NA	1	1	1	0	0	NA
C22	Q27	1	1	1	1	0	0	0	0	1	1	1	1	1	1
C23	Q28	0	NA	NA	0	0	0	0	0	1	0	NA	0	0	0
C34	Q29	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C25	Q30	1	1	1	NA	1	1	1	1	1	1	1	1	1	1

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