



# UNIVERSIDAD DE GRANADA

Facultad de Ciencias Económicas y Empresariales  
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TESIS DOCTORAL

## **The role of organizational characteristics in driving Corporate Social Responsibility and Sustainability: Perspectives on the management of public and private entities**

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# **1.**

## **INTRODUCCIÓN**

## 1. INTRODUCCIÓN

# 1 INTRODUCCIÓN

## 1.1. MARCO GENERAL E INTERÉS DE LA TESIS DOCTORAL

En los últimos años, el impacto de las interrelaciones corporativas e institucionales sobre el desempeño medioambiental y social se ha intensificado, manifestándose en efectos directos e indirectos relacionados con el cambio climático. Las empresas, que operan en ecosistemas complejos y globalizados, se enfrentan a desafíos y oportunidades relacionados con su capacidad de influir y responder a una diversidad de partes interesadas o *stakeholders*, incluidos gobiernos, consumidores, inversores y la sociedad civil. Esta interacción ha dado lugar a una mayor conciencia sobre la responsabilidad corporativa en la gestión de los problemas medioambientales y sociales, exigiendo a las empresas no solo minimizar su impacto negativo, sino también contribuir positivamente al desarrollo sostenible (Carroll & Shabana, 2010).

La Responsabilidad Social Corporativa (RSC) ha evolucionado significativamente, pasando de ser una preocupación periférica a convertirse en un elemento esencial de la estrategia empresarial. Cada vez más, las empresas reconocen que su éxito a largo plazo no depende únicamente de su rentabilidad económica, sino también de su desempeño en dimensiones sociales y medioambientales. Este cambio de paradigma se refleja en la integración de prácticas sostenibles en las operaciones centrales de las empresas y en la alineación de sus objetivos con los Objetivos de Desarrollo Sostenible (ODS) de las Naciones Unidas (Ferrón-Vílchez et al., 2022). A través de estas prácticas, las empresas no solo fortalecen su reputación y confianza frente a los *stakeholders*, sino que también acceden a nuevos mercados y garantizan su resiliencia en un entorno competitivo y cambiante.

La presión para adoptar y mejorar las prácticas de RSC proviene tanto de marcos regulatorios como de las expectativas crecientes de los *stakeholders*. Los gobiernos han introducido políticas que fomentan prácticas empresariales sostenibles, mientras que los inversores y consumidores prefieren, cada vez más, apoyar a empresas que demuestren un sólido desempeño en términos de criterios medioambientales, sociales y de gobierno corporativo (ESG, por sus siglas en inglés) (Eccles et al., 2012). En respuesta, las empresas han comenzado a priorizar la transparencia y la divulgación de sus impactos mediante informes de sostenibilidad, que actúan como un mecanismo de señalización para demostrar su compromiso con la sostenibilidad y reforzar su legitimidad (Connelly et al., 2011). Los índices de inversión socialmente responsable, como el Dow Jones Sustainability Index y FTSE4Good, utilizan estos informes para evaluar el desempeño de las empresas, mostrando cómo la sostenibilidad se convierte en un factor clave para la toma de decisiones de los inversores (Hahn & Lülfs, 2014). La reciente Directiva Europea 2022/2464 sobre la presentación y divulgación de información sobre sostenibilidad corporativa (conocida por sus siglas como CSDR) ilustra esta creciente preocupación e importancia, siendo una de las “grandes esperadas” en los últimos años.

Además, los informes de sostenibilidad desempeñan un papel crucial en la transformación de las relaciones entre las empresas y sus partes interesadas. Al proporcionar información clara y verificable sobre su desempeño, las empresas no solo mejoran su reputación, sino que también fortalecen la confianza en sus operaciones. Esta transparencia es especialmente relevante en un contexto en el que los consumidores y otros actores buscan evaluar la coherencia entre las declaraciones corporativas y las acciones reales (Eccles & Serafeim, 2013). Sin embargo, aún queda por explorar si estas iniciativas de sostenibilidad son genuinas y sustantivas o si, en algunos casos, su implantación es simbólica y sirven principalmente como herramientas para mejorar la imagen corporativa.

Más allá de las iniciativas empresariales, los gobiernos juegan un papel central en el avance de la sostenibilidad a través de políticas públicas que buscan reducir el impacto medioambiental,

promover el bienestar social y fomentar el desarrollo económico. En este contexto, la Contratación Pública Verde (GPP, por sus siglas en inglés) emerge como un instrumento político crucial. La GPP permite a los gobiernos influir directamente en los mercados mediante su poder de compra, al priorizar bienes y servicios con menor impacto ambiental (Preuss, 2007). Este enfoque tiene sus raíces en la Conferencia de las Naciones Unidas sobre Medio Ambiente y Desarrollo de 1992 en Río de Janeiro, donde se destacó por primera vez la importancia de un consumo y una producción sostenibles (Scholz, 2017; ten Have, 2021).

La GPP ha evolucionado para convertirse en un mecanismo clave que permite a los gobiernos cumplir su doble función de formuladores de políticas y compradores responsables (McCrudden, 2004). Actualmente, representa una parte significativa del gasto público, alcanzando alrededor del 28,5% del PIB a nivel mundial en el año 2022 (World Bank, 2025). Su implementación no solo reduce el impacto medioambiental de las operaciones gubernamentales, sino que también impulsa la innovación en productos y servicios sostenibles por parte de las empresas, contribuyendo a la transición hacia economías más verdes. Por ejemplo, estudios recientes han demostrado que la GPP puede incentivar indirectamente a los proveedores a adoptar prácticas sostenibles al incluir criterios ecológicos en los procesos de licitación, ampliando así su impacto más allá del sector público (Brammer & Walker, 2011).

Sin embargo, a pesar de su potencial, la GPP enfrenta importantes desafíos en términos de implementación efectiva. Aunque se han identificado beneficios como la reducción de emisiones de carbono y la promoción de la economía circular, el impacto directo de la GPP en resultados sociales y económicos, como la creación de empleo verde o el desarrollo regional, ha recibido menos atención en la literatura (Erridge & Henningan, 2006). Además, existen barreras prácticas, como la falta de formación en sostenibilidad, la resistencia organizativa y las limitaciones presupuestarias, que dificultan su adopción en ciertos contextos (De Giacomo et al., 2019; Liu et al., 2019).

El papel de las pymes es particularmente relevante en este contexto ya que representan la gran mayoría del tejido empresarial global y son actores clave en la transición hacia economías sostenibles. En España, las pymes constituyen el 99,8% del tejido empresarial y generan aproximadamente el 70% del empleo, lo que pone de manifiesto su importancia estratégica en términos económicos y sociales (Ministerio de Industria, Comercio y Turismo, 2024). Sin embargo, estas organizaciones enfrentan desafíos específicos, tales como recursos limitados, falta de acceso a formación especializada y una menor capacidad para responder a las presiones del mercado (Aragón-Correa et al., 2008). A pesar de estas limitaciones, las pymes cuentan con un potencial significativo para transformar estas barreras en oportunidades, especialmente mediante la adopción de prácticas como la GPP.

Desde una perspectiva organizativa, factores internos como la cultura corporativa verde, los programas de formación medioambiental y el liderazgo visionario de la alta dirección son fundamentales para la implementación exitosa de estrategias sostenibles. Según la Teoría de la Visión Basada en Recursos (VBR), estos recursos intangibles proporcionan ventajas competitivas que permiten a las empresas superar barreras estructurales y aprovechar las oportunidades de mercado (Barney, 1991; Hart, 1995). En el caso de las pymes, estas capacidades internas no solo fortalecen su resiliencia, sino que también las posicionan favorablemente en mercados más sostenibles (Russo & Fouts, 1997).

La interacción entre factores internos y presiones externas es particularmente relevante en el contexto de la GPP. Por un lado, los marcos regulatorios y las demandas del mercado impulsan a las empresas a adoptar prácticas sostenibles; por otro, los recursos y capacidades internas determinan su capacidad para responder eficazmente a estas presiones. Este enfoque integrado no solo proporciona un marco teórico robusto para analizar las decisiones de sostenibilidad en

las pymes, sino que también genera recomendaciones prácticas para responsables de políticas y gerentes interesados en fomentar un cambio sostenible desde una perspectiva *bottom-up* (Brammer & Walker, 2011; Rosell, 2021).

En este sentido, la investigación presentada en esta propuesta de tesis doctoral busca llenar las lagunas existentes en la literatura al explorar los factores que impulsan la adopción de prácticas sostenibles tanto en el sector privado como en el público. En particular, se analizan los determinantes organizativos de la GPP en las pymes, evaluando cómo la interacción entre los recursos internos y las presiones externas influye en la motivación y capacidad para adoptar estas prácticas. Este análisis no solo puede contribuir al avance teórico en el campo de la sostenibilidad, sino que también puede proporcionar herramientas prácticas para impulsar la transición hacia modelos más sostenibles en diferentes contextos económicos y culturales.

## 1.2. OBJETIVOS DE INVESTIGACIÓN

El objetivo general de la tesis es proporcionar una comprensión teórica y empírica integral sobre las acciones de sostenibilidad tanto en empresas privadas como en entidades públicas, mediante el análisis de las relaciones entre las variables clave que influyen en el comportamiento medioambiental corporativo, explorando el estado del arte en la Contratación Pública Verde (*Green Public Procurement*, GPP) y su conexión con el desarrollo sostenible, e identificando las motivaciones, características y factores organizativos que impulsan o dificultan la participación en programas de GPP.

| OBJETIVOS DE LA INVESTIGACIÓN                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analizar teórica y empíricamente de las acciones de sostenibilidad en empresas privadas y entidades públicas.                                                               |
| Analizar las relaciones entre las variables, tanto a nivel individual como de conjunto, para establecer modelos explicativos del comportamiento medioambiental corporativo. |
| Comprender el estado del arte sobre la GPP y su relación con el Desarrollo Sostenible.                                                                                      |
| Analizar las motivaciones corporativas para adherirse a los programas de GPP y las características que influyen en la participación.                                        |
| Entender los efectos de diversas variables organizativas en la decisión de adherirse a los programas de GPP.                                                                |

## 1.3. ESTRUCTURA DEL TRABAJO DE INVESTIGACIÓN

Esta tesis doctoral consta de cinco capítulos, agrupados en tres secciones: la introducción (**Capítulo 1**), el cuerpo principal que contiene los tres artículos de investigación publicados (**Capítulos 2, 3 y 4**), y las conclusiones (**Capítulo 5**). En este primer capítulo se introducen los conceptos clave, se justifica el interés de la investigación y se establecen los objetivos generales.

En el **Capítulo 2**, titulado "*Sending Corporate Social Responsibility Signals: What Organizational Characteristics Must Be Met?*", presenta el estudio sobre las características organizativas que pueden influir en la decisión de una empresa de enviar señales de Responsabilidad Social Corporativa (RSC) a través de informes de sostenibilidad, utilizando específicamente los estándares GRI G4.0. Las señales de RSC se definen como la divulgación voluntaria e intencionada del desempeño social y ambiental de una empresa. El marco teórico de este capítulo es doble: la Teoría de la Señalización (Spence, 1973; Connelly et al., 2011) y la Teoría Neo-Institucional (DiMaggio & Powell, 1983). Ambos enfoques teóricos sirven para explicar por qué las empresas envían estas señales. La Teoría de la Señalización sugiere que las

empresas utilizan los informes de RSC para señalar su compromiso ético a los grupos de interés externos, mejorando así su reputación (Zerbini, 2017). Por otro lado, la Teoría Neo-Institucional sostiene que las empresas adoptan prácticas estandarizadas de RSC debido a presiones isomórficas, lo que lleva a comportamientos similares entre las empresas en respuesta a demandas institucionales externas (Matten & Moon, 2008).

El estudio examina cinco características organizativas clave: tamaño, rentabilidad, concentración de la estructura de propiedad, reputación corporativa y si la empresa opera en un sector altamente contaminante. Usando regresión logística binaria y análisis comparativo cualitativo (QCA), los resultados muestran que las empresas más grandes, más rentables, que operan en sectores contaminantes y que tienen una reputación corporativa positiva son más propensas a enviar señales de RSC. Sin embargo, la concentración de la estructura de propiedad afecta negativamente el envío de señales de RSC. Esto puede deberse a que las empresas con una estructura de propiedad más dispersa suelen ser más transparentes sobre la información sobre sostenibilidad que divulgan en sus informes. Esto sugiere que las empresas con estructuras de propiedad no concentradas pueden buscar reducir la asimetría de información mediante la divulgación pública (Crisóstomo & Freire, 2015). Este Capítulo 2 fue publicado en 2022 en el journal *Review of Business Management o Revista Brasileira de Gestão de Negócios*, journal indexado como Q4 en “Business” y en “Management” con un índice de impacto (edición 2022) de 1.1 (Ortega-Carrasco & Ferrón-Vílchez, 2022).

En el **Capítulo 3**, titulado "*Charting the Course of Green Public Procurement: A Systematic Literature Review and Bibliometric Analysis*", el foco de atención cambia hacia la Contratación Pública Verde (GPP), una herramienta política vital utilizada por los gobiernos para promover la sostenibilidad. La GPP se refiere al proceso mediante el cual las autoridades públicas adquieren bienes y servicios con un menor impacto medioambiental a lo largo de su ciclo de vida (Comisión Europea, 2011). Este capítulo realiza una revisión sistemática de la literatura y un análisis bibliométrico para evaluar el estado del arte en la investigación sobre GPP entre 2003 y 2022, analizando 184 documentos extraídos de las bases de datos *Web of Science* y *Scopus*.

La revisión identifica cinco áreas clave en la investigación sobre GPP. Primero, destaca la necesidad de enfoques metodológicos más sólidos, recomendando la combinación de investigaciones cualitativas y cuantitativas. Segundo, señala la falta de comprensión sobre los factores que influyen en la adopción de GPP en las empresas de países en desarrollo, enfatizando la necesidad de estrategias contextuales. Tercero, explora las barreras de las empresas para adherirse a la GPP, como conflictos internos, limitaciones de recursos y desafíos de cumplimiento (Brammer & Walker, 2011). Cuarto, subraya la creciente importancia de la digitalización en los procesos de contratación, que puede mejorar los resultados sociales y medioambientales de las empresas que se adhieren a GPP (Testa et al., 2016a). Finalmente, la revisión vincula la GPP con políticas sociales más amplias, abogando por incentivos gubernamentales para alinear la GPP con los objetivos de desarrollo sostenible (Preuss, 2007).

Este **Capítulo 3** ofrece un análisis exhaustivo de la evolución de la GPP, sus fundamentos teóricos y las principales barreras y facilitadores identificados en la literatura. Los hallazgos sugieren que, si bien la GPP es cada vez más reconocida como una herramienta crucial para promover la sostenibilidad, su adopción varía significativamente entre regiones y sectores debido a los diferentes contextos institucionales y niveles de compromiso político. Este artículo ha sido publicado en 2024 (disponible en Early View) en *Sustainable Development*, journal indexado como D1 en “Regional & Urban Planning” (2/54), con un índice de impacto (edición 2023) de 9.9 (Ortega-Carrasco et al., 2024).

El **Capítulo 4** de esta tesis doctoral, titulado "*Decoding the Green DNA: Organizational Drivers of GPP Adoption in Andalusian SMEs*", analiza los factores organizativos que impulsan la adopción de contratación pública verde (GPP) usando una muestra de pymes andaluzas. El capítulo se desarrolla a partir de los hallazgos del Capítulo 3, profundizando en el impacto que tienen las características internas de gestión sobre la motivación de las empresas para adherirse a la GPP.

Utilizando como enfoque teórico a la Teoría de Recursos y Capacidades (RBV), el estudio argumenta que ciertos recursos y capacidades internos (v.g., la formación medioambiental, la cultura organizativa sólida orientada hacia la sostenibilidad o la visión sostenible de los miembros de la dirección de la empresa), desempeñan un papel crucial para superar las barreras de recursos limitados y presiones externas que soportan las pymes. Concretamente el trabajo examina si los programas de formación medioambiental pueden mediar en la relación entre la cultura organizativa y la adherencia a GPP, mientras que la visión de la alta dirección actúa como un moderador en esta dinámica.

El capítulo se centra en un contexto específico: las pymes andaluzas, que representan el 99.91% de las empresas de la región, según datos recientes (Ferrón-Vílchez et al., 2023). El análisis utiliza una muestra de 206 pymes de diferentes sectores industriales en Andalucía y emplea un modelo de mediación moderada, usando la macro PROCESS desarrollada por el Prof. Hayes, para explorar las relaciones entre las variables clave.

Los resultados destacan la importancia de una cultura organizativa con fuertes valores medioambientales como un impulsor crítico para la adherencia de las pymes a la GPP. Sin embargo, también revelan que el papel de la alta dirección puede variar dependiendo del nivel de énfasis en la sostenibilidad, sugiriendo que una visión gerencial sólida puede complementar, pero también opacar, la influencia de la cultura organizativa en ciertos contextos.

Este capítulo concluye proporcionando recomendaciones para personas responsables de la gestión de la empresa, responsables de políticas públicas y miembros de la Academia con interés en fomentar la sostenibilidad en las pymes, especialmente mediante el uso estratégico de los recursos internos para impulsar la adherencia a la GPP.

Finalmente, el **Capítulo 5** resume los hallazgos clave de los tres artículos de investigación y presenta las implicaciones teóricas y prácticas. Además, este capítulo esboza las principales limitaciones de estos estudios y sugiere recomendaciones y direcciones para futuras investigaciones.

Table 1.1 Artículos publicados que forman parte de la tesis

| Título del artículo                                                                                                                       | Año  | Journal                                  | JCR | Cuartil (JCR)                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Sending Corporate Social Responsibility Signals: What Organizational Characteristics Must Be Met?</i>                                  | 2022 | Revista Brasileira de Gestão de Negócios | 1.1 | Q4 (Business) Posición: 261/302<br>Q4 (Management) Posición: 353/401                                                                                      |
| <i>Green public procurement as an effective way for sustainable development: A systematic literature review and bibliometric analysis</i> | 2024 | Sustainable Development                  | 9.9 | D1 (Development Studies) Posición: 1/63<br>Q1 (Green & Sustainable Science & Technology) Posición: 12/91<br>D1 (Regional & Urban Planning) Posición: 2/54 |
| <i>Decoding the Green DNA: Organizational Drivers of GPP Adoption in Andalusian SMEs</i>                                                  | 2024 | N/A                                      | N/A | N/A                                                                                                                                                       |

#### 1.4. MARCOS TEÓRICOS Y METODOLOGÍAS UTILIZADAS

En este apartado se presentan los marcos teóricos y las metodologías empleadas en cada uno de los capítulos que conforman el cuerpo principal de esta tesis doctoral. Cada capítulo utiliza un enfoque teórico y metodológico específico, adecuado para abordar las preguntas de investigación y los objetivos planteados. A continuación, se detallan los marcos conceptuales y las técnicas utilizadas en los capítulos 2, 3 y 4.

El marco teórico del **Capítulo 2** se fundamenta en la Teoría del Señalamiento (Spence, 1973), que analiza cómo las empresas envían señales intencionales y voluntarias para reducir la asimetría de información entre ellas y sus grupos de interés. En este contexto, las empresas utilizan los informes de sostenibilidad, específicamente bajo el estándar GRI, para demostrar su compromiso con la RSC, lo que refuerza su legitimidad y reputación ante stakeholders (Connelly et al., 2011; Hahn & Lülfes, 2014). Este marco se complementa con la Teoría Neo-Institucional (DiMaggio & Powell, 1983), que explica cómo las presiones coercitivas, normativas y miméticas llevan a la homogeneización de prácticas organizativas, incluyendo la adopción de estándares de sostenibilidad (Matten & Moon, 2008).

Metodológicamente, este capítulo emplea una combinación de enfoques cuantitativos. Por un lado, se utiliza la regresión logística binaria para analizar los efectos individuales de las características organizativas (i.e., tamaño, rentabilidad y reputación corporativa) en el envío de señales de RSC. Por otro lado, se emplea el análisis comparativo cualitativo (QCA), que permite identificar configuraciones de características organizativas que impulsan la adopción de estas señales. Esta combinación metodológica proporciona un análisis integral de las dinámicas que subyacen al envío de señales de RSC (Fiss, 2007; Ragin, 1987).

Dado que el **Capítulo 3** es una revisión sistemática de la literatura sobre la GPP, no cuenta con un marco teórico explícito. Sin embargo, organiza su análisis mediante el protocolo PRISMA, ampliamente reconocido por garantizar la transparencia y replicabilidad en revisiones sistemáticas (Page et al., 2021). Este protocolo permitió identificar y analizar 184 artículos relevantes sobre GPP publicados entre 2003 y 2022.

Para el análisis bibliométrico, se utilizaron herramientas como VOSViewer y CitNetExplorer, que facilitaron el mapeo de redes de autores, instituciones y temas clave en la investigación sobre GPP (Van Eck & Waltman, 2010). Estas técnicas permitieron identificar tendencias emergentes, facilitadores y barreras para la implementación de GPP, destacando la creciente importancia de la digitalización y los contextos institucionales en su adopción (Testa et al., 2016b; Rosell, 2021).

El marco teórico del **Capítulo 4** se basa en la Teoría de Recursos y Capacidades (Barney, 1991), que defiende que los recursos y capacidades internos proporcionan ventajas competitivas sostenibles. En el contexto de la GPP, este marco teórico destaca el papel de recursos intangibles, como una cultura organizativa verde, la formación medioambiental y una visión gerencial proactiva, como impulsores clave para que las empresas decidan adoptar prácticas sostenibles (Hart, 1995; Russo & Fouts, 1997) en general, y adherirse a programas de GPP en particular. Además, se considera cómo estos recursos pueden interactuar y mediar en el proceso de toma de decisiones organizativas respecto a la GPP.

Metodológicamente, se utilizó la macro PROCESS del Prof. Hayes (versión 4.2) para explorar relaciones complejas de mediación y moderación entre variables. Este enfoque se aplicó a una muestra de 206 pymes andaluzas. Este enfoque metodológico es particularmente útil para evaluar dinámicas contextuales específicas, considerando las limitaciones de recursos y presiones institucionales que enfrentan las pymes.

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## 2.

### SENDING CORPORATE SOCIAL RESPONSIBILITY SIGNALS: WHAT CHARACTERISTICS MUST BE MET?

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## 2. SENDING CORPORATE SOCIAL RESPONSIBILITY SIGNALS

## 2 SENDING CORPORATE SOCIAL RESPONSIBILITY SIGNALS: WHAT CHARACTERISTICS MUST BE MET?

### 2.1. ABSTRACT

This study delves into the characteristics of companies that actively send Corporate Social Responsibility (CSR) signals, focusing on key factors such as operating in highly polluting sectors, ownership structure, corporate reputation, profitability, and company size. Grounded in Signaling Theory and Neo-Institutional Theory, this research provides an in-depth analysis of why certain organizations choose to signal their CSR efforts to society. Utilizing a robust mixed-method approach, it combines qualitative comparative analysis (QCA) with binary logistic regression, analyzing data from a sample of 95 companies.

The findings reveal that companies more inclined to send CSR signals are typically larger, more profitable, operate in environmentally sensitive sectors, have dispersed ownership, and possess a strong corporate reputation. Crucially, the study identifies corporate reputation as a pivotal driver in the decision-making process for CSR signaling. This research offers practical insights for managers and policymakers, highlighting the complementary organizational traits that motivate companies to engage in CSR communication. Its originality lies in enhancing our understanding of the strategic profiles of companies that engage in CSR signaling, emphasizing the importance of reputation and ownership structure in legitimizing CSR activities. This work holds value for stakeholders looking to comprehend the factors that prompt companies to send CSR signals and engage with sustainable practices.

### 2.2. INTRODUCTION

Companies are increasingly aware of the impact of their activities on society (Hahn & Künen, 2013) as a large amount of information is generated about how they act and most of this information is open publicly and it is free online. However, there is also information which is private and that generates a certain asymmetry between those who possess it and those who could make more rational decisions if they had it (Crisóstomo & Freire, 2015; Stiglitz, 2002). As a consequence, a significant percentage of companies that implement corporate social responsibility (hereinafter CSR) initiatives decide to publish their sustainability reports as a means to publicize these CSR practices to the general public and thereby, legitimize their actions in response to the social rules and stakeholder's expectations (Aldaz, Alvarez, & Calvo, 2015; Cunha & Moneva, 2018; Deegan & Gordon, 1996; Guthrie & Parker, 1989; Woerkom & Zeijl-Rozema, 2017). CSR initiatives consist of "*policies and practices of corporations that reflect the business responsibility for a wider societal good*" whose "*precise manifestation and direction of this responsibility lie at the discretion of the corporation*" (Matten & Moon, 2008, p.5). Following this definition, this work deals with CSR signals, understood as the voluntary and intentional disclosure of information about the social and environmental behavior and/or performance of the company.

Related to CSR signals, prior literature has examined the relationship between several organizational characteristics in isolation with the disclosure of CSR practices. For instance, Aldaz et al. (2015) showed that a positive relationship exists between the disclosure of non-financial reports and the company's reputation. However, prior approaches have paid no attention to the effect of the combination of various determinants in a joint manner that could fail to consider that companies which usually send CSR signals, differ in many other organizational characteristics from those that do not send CSR signals. This fact could lead to unspecified models that ignore the effect of complementary organizational mechanisms on sending CSR signals. At this point, a question arises: What characteristics must companies fulfil so that they would decide to communicate to society its social and environmental commitment

through CSR signs? Drawing upon Signaling Theory and Neo-Institutional Theory, the main aim of this study is to examine whether the sending of CSR signals by companies to society through CSR reports under the GRI standard is related to certain organizational characteristics that can be combined such as: company size, profitability, corporate reputation, ownership structure (the degree of concentration) and the level of pollution in the sector in which the company operates. To analyze these relationships, a sample of 95 Spanish companies indexed in MERCO, a CSR reputation list ranking, was used which were treated empirically through binary logistic regression as well as qualitative comparative analysis (hereinafter, QCA). The QCA technique is especially appropriate to analyze how different organizational characteristics can be combined in sending CSR signals, since it allows us to know which elements of a configuration are connected to outcomes (Fiss, 2007; Ragin, 1987).

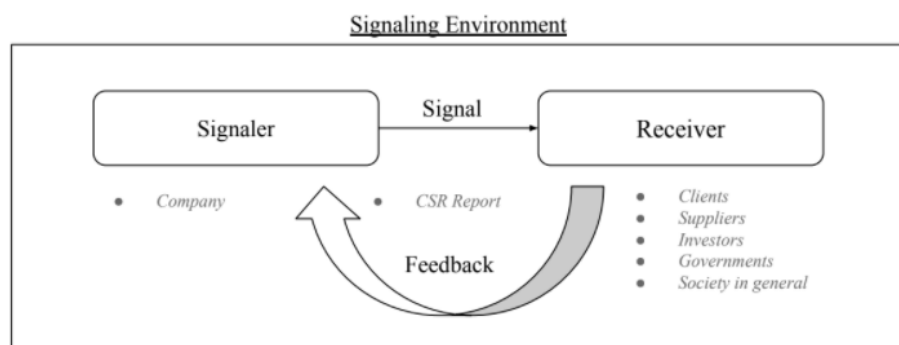
## 2.3. LITERATURE REVIEW

### 2.3.1 Theoretical approaches for disclosing CSR information

This study relies on two theoretical frameworks to draw the importance of making public the CSR company information: The Signaling Theory and the Neo-Institutional Theory.

The *Signaling Theory* (Spence, 1973) consists of a theoretical approach that explains that in the presence of two parties (individuals or organizations) the signaler can decide whether to communicate (signal) or not the information that he/she has, and the receiver must choose how to interpret that information (Connelly et al., 2011). The theoretical approach has been widely used in various academic fields in the area of management such as, human resources management (Ehrhart & Ziegert, 2005; Gomes & Neves, 2011), strategy management (Certo, 2003; Park & Mezias, 2005) or consumer behavior (Cheung et al., 2014; Mavlanova et al., 2016). The five key concepts of the *Signaling Theory* are: (1) the *signalers* who are internal people (i.e., employees, managers, etc.) that obtain information about individuals, products or organizations that are not available for agents outside the organization (Spence, 1973; Ross, 1977); (2) the *signal* as the information that is sent abroad (Certo, 2003); (3) the *receiver* who receives the information (signal) emitted by the signaler (Connelly et al., 2011); (4) the *feedback* (Gupta et al., 1999) as the sending information about the success or effectiveness of the communication process; and finally, (5) the *signaling environment* as the framework in which the four previous concepts have been carried out sequentially (Connelly et al., 2011). Figure 2.1 shows how those elements are interconnected.

**Figure 2.1:** Elements in Signaling Theory and relation to CSR



Note: Adapted from 'Signaling theory: A review and assessment' .Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R., 2011, *Journal of Management*, 37(1), 39–67'

Among these five elements of the *Signaling Theory*, this work focuses on the treatment of firm's signals, specifically the use of CSR signals. The current work defines CSR signal as information regarding the social and environmental behavior and/or performance of the company that decides to transmit it voluntarily and intentionally. The conception that companies can signal

their ethical nature through the development and implementation of CSR initiatives began becoming popular in the early nineties (Fombrun & Shanley, 1990). For instance, Fombrun and Shanley (1990) argued that actions such as donating a certain amount of money to charities and public foundations can make a company considered as more socially responsible and this fact would have a positive impact on its reputation. In fact, Zerbini (2017) exposes an instrumental vision of CSR initiatives as signals that the company sends to society with the aim of revealing certain actions not known by the market, in order to obtain a higher performance (Connelly *et al.*, 2011). In addition, Spence (2002) considers that CSR actions can be used by firms to avoid the problem of adverse selection<sup>1</sup>.

Prior literature has highlighted that one of the reasons why some firms decide to send signals about their CSR practices is to be able to influence investors (positively) and rating agencies that usually participate in the elaboration of stock indexes of socially responsible companies, such as the Dow Jones Sustainability Index or the Financial Times Stock Exchange 4 Good (Hahn & Lülfs, 2014). At the same time, companies and other investors often use such sustainability indexes in their decision making so that the visibility of the CSR signal is highly effective (Connelly *et al.*, 2011; Hahn & Lülfs, 2014). Thus, the Signaling Theory is an appropriate theoretical approach to explain the importance of the company's disclosure (i.e., signaler) of CSR reports (i.e., signal) in order to convince the audience (i.e., receiver), who could be potential clients, suppliers, investors, governments, or society in general of the social and environmental commitment of the company. That audience could demand to implement that practice (i.e., feedback), determined also by the context in which that company operates (i.e., signaling environment). Figure 2.1 shows (in grey font) how those elements are linked among each other.

In addition to the Signaling Theory, the theoretical approach of Neo-Institutionalism also serve as an adequate frame to explain what underlies the disclosure of the company's CSR practices since Neo-Institutional Theory attempts to explain why companies seek the homogenization of organizational processes (DiMaggio & Powell, 1983). Matten and Moon (2008) reflected the tendency toward the homogenization of institutional environments worldwide and indicated *“how regulative, normative and cognitive processes lead to increasingly standardized and rationalized practices in organizations across industries and national boundaries”* (Matten & Moon, 2008, p.10). That process of similarity among organizations is defined as isomorphism by Institutional Theory (DiMaggio & Powell, 1983; Greenwood & Hinings, 1996). This isomorphism implies that the institutional forces due to their powerful influence tend to unify the business environment and make all the companies behave equally (Shabana *et al.*, 2017). From this theoretical perspective, the sending of CSR signals could be labelled as a mimetic isomorphic practice. Mimetic isomorphism refers to how organizations request to imitate those organizational practices or procedures that have been successful (DiMaggio & Powell, 1983). According to King *et al.*, (2005), there are two types of actions to face institutional pressures and to increase legitimacy: By internal actions aiming to reach structural change adopting trusted and proved strategies within the industry and, by external actions as those aimed at gaining organizational endorsement by external constituents. Thus, following King *et al.* (2005), the CSR signals, as a mimetic isomorphic practice, could be seen as an internal and external action at the same time since (1) *the disclosure of CSR information could transform processes and strategies within the company and* (2) *it could legitimate the activity of the company for its stakeholders*. Thus, the huge increase in the voluntary publication of non-financial or CSR reports by companies exemplifies this mimetic isomorphism: through this disclosure, a CSR signal is sending with the approval of the institutions that promote CSR practices (Kolk, 2005). However, nowadays, in business as well as social context, the disclosure of non-financial information has become an essential practice to such an extent that, in certain

occasions it has ceased to be an example of mimetic isomorphism to become a coercive isomorphism. The coercive isomorphism refers to those actions in response to political impositions, legal rules, and state regulations (Monticelli et al., 2017). In the case of non-financial reports as CSR signal, recently revealed several regulatory frameworks that obliges some specific companies to emit the non-financial reports that have emerged. As the policy-making process has moved from national levels to the EU institutions (Doh & Guay, 2006), those companies that fulfill the requirements proposed by the directive 2014/95 of the EU should disclose non-financial information. However, as directives they can set a goal, but they cannot impose laws. As a consequence, specific country-based laws have appeared. For instance, the Spanish Law 11/2018 includes the mandatory requirement concerning the disclosure of non-financial report for those companies with more than 250 employees (optionally more than 500 employees of the same company group), those with a public interest, those with an active of more than 20 million euros, or those with more than 40 million euros of gross income. Therefore, this circumstance exemplifies how a CSR signal which is traditionally identified such as a practice of mimetic isomorphism has been changed into an example of coercive isomorphism.

### 2.3.2 Measuring the CSR Signals

Prior literature has shown that one of the most used tools for sending CSR signals is the publication of CSR reports by companies (Hahn & Lülfs, 2014; Legendre & Coderre, 2013). However, the usefulness of CSR reports that companies disclose in order to reduce asymmetric information and thus improve transparency can be questionable, as they do not always aim to promote corporate responsibility but procure this information to comply with aesthetic objectives (Hahn & Lülfs, 2014). Additionally, even in the circumstances required by law (e.g., Directive 2014/95/EU) to disclose non-financial reports there is also no unique recommended standard to follow by doing so.

Nevertheless, several standardized indicators are currently used which have the advantage of homogeneity in the measurement against the subjectivity of the information that companies can publish in their CSR reports without using a standardization model. Some of these measures, which are commonly accepted and used as a CSR signal by literature, are the adoption of environmental certification such as the ISO 14001 standard or EMAS (Bansal & Hunter, 2003; Vílchez et al., 2017), the performance indicators developed by the Global Reporting Initiative (hereinafter GRI) (Hanh & Kühnen, 2013; Michelin, 2011), the adoption of the GRI methodology in the CSR reports of the company (Nikolaeva & Bicho, 2011) or the key environmental performance indicators (KPI) elaborated by the Government of the United Kingdom (Sun et al., 2010) among others. Table 2.1 shows some CSR signals used by the prior literature.

This work has focused attention on a specific case of sending CSR signals using the adoption of the GRI methodology in the CSR reports of the company. The interest in GRI is due to the fact that, currently, more than 12,400 companies worldwide (including industry leaders) have adopted GRI as a standard for CSR reporting. For example, large conglomerates and multinational companies like Adidas, Coca Cola, Ford, Johnson & Johnson, BNP Paribas, Shell, Dell, Colgate-Palmolive, among others, use GRI standards in their non-financial reports. Further, several works have shown that companies have increased their participation in disclosing environmental and social information over the last few years (Fifka, 2013) and that they are progressively adopting sustainability standards such as (and specially) the GRI guidelines (Marimon et al., 2012). Therefore, due to its popularity and industry wide acceptance, this work considers complying with GRI standards as an effective measure of CSR signaling.

## 2. SENDING CORPORATE SOCIAL RESPONSIBILITY SIGNALS

Table 2.1: CSR Signals and its receivers

| Field                | Article                                                                  | Signal                                                                         | Receiver                        |
|----------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------|
| <b>Disclosure</b>    | Simaens and Koster (2013)                                                | Annual reports <i>GRI G3</i>                                                   | Investors, consumers, employees |
|                      | Wells, Valacich, and Hess (2011)                                         | Corporate webpages                                                             | Stakeholders                    |
| <b>“Trust marks”</b> | Chavez, Wiggins and Yolas (2001)                                         | Membership in business ethics clubs (i.e., <i>Ethics Officer Association</i> ) | Investors                       |
|                      | Bansal and Hunter (2003)                                                 | Early adoption of ISO 14001                                                    | Stakeholders                    |
|                      | Michelon (2011), Nikolaeva and Bicho (2011), Legendre and Coderre (2013) | Adoption of Sustainability Reports ( <i>GRI</i> )                              | Stakeholders                    |
| <b>Performance</b>   | Hart (1995), Russo and Fouts (1997)                                      | Reputation (as a strategic asset)                                              | Shareholders                    |

Note. Adapted from ‘Zerbini, F. (2017). CSR initiatives as market signals: A review and research agenda. *Journal of Business Ethics*, 146(1), 1–23.’

### 2.3.3 Link between GRI and CSR

The GRI proposes that companies comply with certain environmental standards in their CSR reports and provides guidance on what the CSR reports should contain in order to refer to their real environmental actions by standardizing the information presented (GRI, 2011). According to GRI (2013), the G4.0 is the fourth version of the GRI Guide that was presented in May 2013, and its last version in October 2016. Nowadays, there is an updated version called “GRI Standards” presented in 2018 as an improvement from GRI G4.0, thus it represents the substitute of the G4.0 version. The main assumption with respect to GRI is the provision of balanced information on the organization’s effectiveness with regard to sustainable development, either in the negative or positive sense (GRI, 2016). In both versions, G4.0 and GRI standards, its publication is the result of consultations and dialogue with hundreds of experts from around the world belonging to companies, unions, academic institutions, financial sector, and society in general. The goal of GRI standards is to help produce meaningful, solid and useful sustainability reports to help make sustainability issues a standard practice.

In relation to CSR, companies whose non-financial reports are adapted to GRI guidelines disclose the same indicators, which give a chance to compare firms and years and thus increases the utility and usefulness of that information (Fuente et al., 2017). This easy comparison between companies that GRI offers is an especially important aspect for the adoption of CSR practices because this requirement suggests that companies should inform about indicators of good performance and, do not omit the bad ones (Fuente et al., 2017). For instance, according to the G4.0 version, the levels that were not exhaustive should be justified, in order to prevent an omission of certain indicators. That way, the G4.0 version of GRI motivated companies not only to improve their image (Hess, 2008), but also to change their behavior and contribute to global governance mechanisms (Wagner & Seele, 2017). The focus on governance disclosure of G4.0 highlighted the relevance of implementation and avoidance of greenwashing practices (Seele & Gatti, 2017).

The more the firm discloses reports on responsibility and internal governance, the better it can be held accountable for its actions, so it could be signaled as an improvement in CSR decisions

(Wagner & Seele, 2017). Therefore, complying with GRI standards could be interpreted as an effective measure of CSR signal.

### 2.3.4 Hypotheses development

Prior literature has shown how (i.e., means) and why (i.e., reasons) companies decide to use CSR reporting in order to improve corporate reputation and image (e.g., Aldaz et al., 2015; Cunha & Moneva, 2018). In their theoretical review about sustainability reporting, Hanh and Kühnen (2013) argued that *“although researchers analyze the effects of a multitude of determinants, only few variables (most notable company’s size, visibility, and sector-affiliation) receive sufficient attention... Research on most determinants tends to come to inconsistent findings”* (Hanh & Kühnen, 2013, p. 17). Hanh and Kühnen (2013) meta-study highlighted that more empirical research is needed concerning the determinants of CSR reporting in companies. Our work attempts to shed light on this topic, analyzing what is the set of organizational determinants that defines the profile of those firms that decide to send CSR signals to society. In doing so, this paper considers three main organizational characteristics: operating in polluting/less polluting industries, the concentration of ownership structure, and corporate reputation. First, hypotheses related to the relationship between each of these variables (in isolation) and the sending of CSR signals are introduced. Next, hypotheses concerning the link between pairs of these characteristics and the sending of CSR signals are presented and, finally, a final hypothesis related to the relationship between the triple combination of these organizational characteristics and the sending of CSR signals is presented.

#### ***Operating in polluting sectors and CSR signals***

The fact they belong to or operate in a sector may become relevant when disseminating CSR initiatives since not all economic activities involve the same level of social and environmental impact. In fact, prior literature has measured the sensitivity of specific sectors to some CSR aspects, focusing the majority of these works on environmental aspects. In general terms, companies that operate in high-risk industries, such as those with high levels of political risk, high levels of pollution, corruption and visibility for the consumer or intense competition, are more likely to be under higher pressures from stakeholders (Hanh & Kühnen, 2013; Legendre & Coderre, 2013). For instance, Deegan and Gordon (1996) considered that companies in high-risk industries reveal a greater quantity and quality of information in their sustainability reports than companies in low-risk industries. Further, Aldaz et al. (2015) surveyed managers from four companies that operate in sectors with a high environmental impact (i.e., oil, chemicals, and energy) noting that in these industries companies seek legitimization through disclosure of environmental information. Thus, since companies are often driven by mimetic tendencies in the industry (Hanh & Kühnen, 2013), according to the theoretical approach related to Neo-Institutionalism, this paper has just focused on environmental aspects, and it considers that the greater the environmental impact of the sector to which the company belongs, the greater the environmental information that society could demand from companies and it will be more willing to send CSR signals. As a consequence, the first hypothesis indicates that the more polluting the sector is, the more willing the company will be to send CSR signals.

*H1: Sending CSR signals is positively related to operating in a highly polluting sector.*

#### ***The concentration of ownership structure and CSR signals***

Prior literature has studied the ownership structure of companies as a determinant (i.e., an explanatory variable) of investment in CSR activities (Hanh & Kühnen, 2013). For instance, Crisóstomo & Freire (2015) considered that concentrated structures are associated with greater CSR activities because, when a reduced number of large controlling shareholders exist, they are usually more interested in long-term returns that CSR practices entail due to improvements

in corporate reputation and image (Crisóstomo & Freire, 2015). Note that, in the academic literature, a concentrated ownership structure is usually considered when an investor owns more than 20% of the shares with the right to vote (Hahn & Kühnen, 2013). However, regarding CSR reporting, a concentrated ownership structure may limit the presentation of CSR reports since the dominant shareholders already have access to the relevant information. Normally, a company with a concentrated ownership structure would not have the need to send excessive CSR signals to markets, since the capital stock is shared among a few shareholders or owners who would not be especially interested in raising external capital (Hahn & Kühnen, 2013). Conversely, “*a dispersed ownership structure increases the need to reduce information asymmetry*” (Hahn & Kühnen, 2013, p.12). Consequently, a dispersed ownership structure implies an incentive for the company to voluntarily provide information to shareholders through its annual reports (Cullen & Christopher, 2002) and its CSR reports. As such, the second hypothesis indicates that the lower the degree of concentration of the ownership structure, the greater willingness there will be to send CSR signals.

*H2: Sending CSR signals is positively related to non-concentrated ownership structures.*

### **Corporate reputation and CSR signals**

Corporate reputation refers to “*the collective opinion of an organization supported by its stakeholders*” (Brammer & Millington, 2005, p.30). CSR actions are a key element in the construction and maintenance of a favorable corporate reputation, which is considered an important strategic resource for the competitive advantage of a company (Aldaz et al., 2015; Sotorrío & Sánchez, 2010; Park et al., 2014). The literature has identified the two sides of the same coin, on the one hand several studies have argued that the disclosure of social and environmental aspects can help to legitimize the company’s behavior and to improve corporate reputation specially, in these cases in which a worse (social and/or environmental) performance exists (Aldaz et al., 2015); on the other hand, other researches have shown that firms with good performance may be especially interested in signaling this positive circumstance (Hahn & Kühnen, 2013). Thus, prior results are inconclusive and ambiguous (Hahn & Kühnen, 2013). At this point, this work considers that firms with a positive corporate reputation will be more likely to send CSR signals because they are interested in disclosing their CSR achievements and its exemplary behavior. Therefore, the third hypothesis indicates that the greater the corporate reputation, the greater the willingness to send CSR signals to society.

*H3: Sending CSR signals is positively related to positive corporate reputation.*

### **The combination of organizational characteristics and CSR signals**

Based on prior theoretical arguments. This work considers, that companies that operate in more polluting sectors and with a positive corporate reputation will be more likely to send CSR signals because they are concerning in disclosing positive results of their CSR practices as they could represent an example to be followed by the rest of the competitors in relation to best CSR practices within a dirty sector. Thus, it is hypothesized that:

*Hypothesis 4: The combination of operating in a highly polluting sector and positive corporate reputation is associated with greater sending CSR signals than operating in a highly polluting sector or positive corporate reputation alone.*

Similarly, companies that operate in more polluting sectors and with a non-concentrated ownership structure will be more likely to send CSR signals since, in this case, by sending CSR signals, companies will satisfy both the demands of stakeholders concerned about the actions of the “*dirty*” sector and the demands of shareholders with diverse ideas and preferences. Therefore, the fifth hypothesis indicates that:

*Hypothesis 5: The combination of operating in a highly polluting sector and non-concentrated ownership structure is associated with greater sending CSR signals than operating in a highly polluting sector or non-concentrated ownership structure alone.*

Furthermore, companies with a positive corporate reputation and with a non-concentrated ownership structure will be more likely to send CSR signals because they will be able to show their CSR achievements to a wide range of shareholders through non-financial reporting. Thus, it is hypothesized that:

*Hypothesis 6: The combination of positive corporate reputation and non-concentrated ownership structure is associated with greater sending CSR signals than positive corporate reputation or non-concentrated ownership structure alone.*

Finally, uniting all the previously mentioned characteristics under a single organizational profile, those companies that operate in more polluting sectors, with a positive corporate reputation and that are owned by a non-concentrated structure simultaneously are the most suitable for sending CSR signals. Therefore, the hypothesis related to the combination of the three organizational characteristics indicate that:

*Hypothesis 7: The combination of operating in a highly polluting sector, positive corporate reputation and non-concentrated ownership structure is associated with greater sending CSR signals than operating in a highly polluting sector, positive corporate reputation, or non-concentrated ownership structure alone.*

### 2.4. METHODOLOGY

#### 2.4.1 Sample

This work used a sample that consists of 95 companies included in a ranking elaborated by the Corporate Reputation Business Monitor (hereinafter, MERCO) similarly to prior studies (Sotorrió & Sánchez, 2010). The MERCO ranking measures annually the corporate reputation of companies operating in Spain and is elaborated by “*Analysis and Research*”, one of the most important market research companies in Spain ([www.merco.info.es](http://www.merco.info.es)). The 95 companies included in the sample are indexed both in the MERCO Companies Ranking (i.e., which measures global corporate reputation) and in the MERCO Responsibility and Corporate Governance Ranking (i.e., which measures criteria for best practices in CSR). The criteria to be included in these rankings are established by various stakeholders, such as NGOs, government agencies, consultants, academics, investors and members of the business sector. Knowing that these companies have the best position in terms of CSR, this sample allows assessing whether a relationship between sending of CSR signals (i.e., level of compliance of GRI G4.0, 2016 version) and the previously listed organizational characteristics.

#### 2.4.2 Variables

##### **Dependent variable: Sending of CSR Signals**

Nowadays the trend of companies is to be more open, and this can be directly associated with the adoption of voluntary standards such as the GRI (Hahn & Künen, 2013; Kolk, 2010). In fact, according to Hahn and Künen (2013, p.5) “*today the GRI is regarded as the de facto global standard for sustainability reporting*”. Therefore, CSR signals are measured relying on the level of compliance with GRI G4.0 standards in its 2016 edition by following prior literature (e.g., Nikolaeva & Bicho, 2011, Michelin, 2011). Note that even if it is not the last version of GRI, the fourth version has been chosen because it has accurate data for measuring this variable. The last version (i.e., GRI Standards) was released in 2018 and there are not enough data that comply with this new version. Information about compliance with GRI G4.0 was obtained from

the *GRI* database. The values of this variable were ranged from 1 to 4 and are showed in Table 2.2.

Table 2.2: Values of level of compliance with *GRI G4.0* (2016 edition)

| Level of compliance                              | Value | Definition                                                                                                                                                                                                                                                                              | % of cases in the MERCO sample |
|--------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Non-compliance of <i>GRI G4.0</i>                | 1     | Companies whose CSR reports do not meet <i>GRI G4.0</i> criteria or have not declared their level of implementation.                                                                                                                                                                    | 44.21%                         |
| Quoting the compliance of <i>GRI G4.0</i>        | 2     | Companies in whose CSR reports the <i>GRI G4.0</i> criteria are quoted, but all requirements for full compliance are not met.                                                                                                                                                           | 6.31%                          |
| "In accordance" with <i>GRI G4.0</i>             | 3     | Companies whose CSR reports comply with <i>GRI G4.0</i> requirements "in accordance" with the standard, but in an "essential" manner, that is, when the report discloses certain general information about its management (at least one indicator) for each identified material aspect. | 13.69%                         |
| "Exhaustive" implementation with <i>GRI G4.0</i> | 4     | Companies that apply the <i>GRI G4.0</i> standard "exhaustively" in their CSR reports, that is, when the report discloses both the general content about its management and all the indicators that are related to each identified material aspect.                                     | 35.79%                         |

Note. Font: Adapted from 'KPMG. (2013). *GRI's G4 Guidelines: The impact on reporting*. KPMG. <https://assets.kpmg/content/dam/kpmg/pdf/2013/06/g4-the-impact-on-reporting-v2.pdf>

Subsequently, this variable (with four categories) was transformed into a dichotomous variable, joining categories 1 and 2 (i.e., *GRI G4.0* is "*not applied*", or is "*only mentioned*" in the CSR report; 50.52% of the cases in the sample) under the value "0" referring to "*no sending of CSR signals*". On the other hand, categories 3 and 4 (i.e., *GRI G4.0* criteria are met in an "*essential*" or "*exhaustive*" manner without necessarily being better than another; 49.48% of the cases in the sample) were also joined under the value "1", referring to "*sending of CSR signals*".

### ***Highly polluting sector***

Prior literature has considered the influence of social and environmental sensitivity of specific sectors in the analysis of CSR practices. At this point, it is essential to note that the majority of these works have focused on environmental aspects. Similar to prior studies (e.g., Vélchez et al., 2017; Cunha & Moneva, 2018), to determine whether the sector in which the company operates is (or is not) highly polluting is, this work followed the classification of Mani and Wheeler (1997), in which highly polluting sectors are considered as "*those with low elasticities of substitution between use of the environment and other productive factors*" (Mani & Wheeler, 1997, p.216). Based on this classification, two types of industries are distinguished: the highly polluting or "dirty" sectors and the less polluting or "clean" sectors. Some examples of highly polluting sectors are the chemical, rubber, plastics or the fuel industry (Cunha & Moneva, 2018; Mani & Wheeler, 1997), while among the less polluting sectors include the production of medical instruments, watches and other appliances. Data belonging to the sector has been extracted from EIKON database. This database is a widely used database in the academic arena (García et al., 2017; Miralles-Quirós & Gonçalves, 2018). It has been elaborated since 2002 by Thomson Reuters and compiles not only economic and financial information from more than 6,000 companies around the world, but also environmental, social and corporate governance data. For the case of the sector, if the company belongs to a highly polluting sector, the value was "1". Otherwise, the value was "0".

### ***Concentration of Ownership Structure***

According to Hahn and Künen (2013) a concentrated ownership structure is considered when at least there is one owner who owns 20% or more of the total shares (with voting rights). To measure the variable "*level of concentration of the ownership structure*", this work relied on

data about the ownership structure of the companies included in the sample for the 2016 fiscal year, obtained from EIKON database. In doing so, a dichotomous variable was created in which if the ownership structure is concentrated, the variable was scored with value “1” and otherwise, the value was “0”.

### **Corporate Reputation**

To measure corporate reputation this work relied on the ESG controversies score elaborated by the EIKON database. According to EIKON, this variable indicates the company’s exposure to environmental, social and governance controversies and negative events reflected in global media (Refinitiv, 2019). ESG controversies scores were obtained from the EIKON database. The values of this variable were ranged from A to D (in each category there are three levels subcategories; for instance, in the category A, there are A+, A, and A-) and are showed in Table 2.3. The score value of A+ means there is no incongruence between its CSR performance disclosed by the company and what the media says about that specific company. Meanwhile, the score value of D- means that a strong difference exists between the information disclosure of the company and what society spreads about it. This categorical variable was transformed into a dichotomous one, considering the median of the score as a reference point. For a reputation higher than the median, the variable took a value equal to “1” which means a positive corporate reputation. Otherwise, it was scored to “0”. At this point, a 30.53% of the cases in the sample were scored as “positive corporate reputation”. To control for reverse causality, the dependent/outcome variable (i.e., sending CSR signal), was gathered in year 2016, but corporate reputation was gathered in 2015 as values of reputation from prior years could influence on the decision of signaling the CSR practices of the company (Aouadi & Marsat, 2018).

Table 2.3: Score Range Grade

| ESG Controversies Score | Minimum value | Maximum Value |
|-------------------------|---------------|---------------|
| D-                      | 0.000000      | 0.833333      |
| D                       | 0.833333      | 0.166666      |
| D+                      | 0.166666      | 0.250000      |
| C-                      | 0.250000      | 0.333333      |
| C                       | 0.333333      | 0.416666      |
| C+                      | 0.416666      | 0.500000      |
| B-                      | 0.500000      | 0.583333      |
| B                       | 0.583333      | 0.666666      |
| B+                      | 0.666666      | 0.750000      |
| A-                      | 0.750000      | 0.833333      |
| A                       | 0.833333      | 0.916666      |
| A+                      | 0.916666      | 1             |

### **Control Variables**

In addition to prior explanatory variables, company’s size and profitability which are two control variables that traditionally have been included in empirical analysis about CSR reporting are also considered (Crisóstomo & Freire, 2015; Hahn & Kühnen, 2013; Sotorrío & Sánchez, 2010).

Related to profitability, Legendre and Coderre (2013) argued that companies with profits equal to or higher than the industry average that tends to be more likely to disclose information about their environmental and social performance and thus be able to legitimize their activities. Furthermore, profitable companies have more financial resources to bear the costs of reporting (Hahn & Kühnen, 2013). To measure the variable “*profitability*”, this work relied on “*pretax income*” for the 2016 fiscal year. This variable has been obtained from the EIKON database.

The pretax income, also called "*profit before taxes*", is calculated by subtracting from the company's income all operating expenses, including interest and depreciation as a consequence of the company's sales. This variable has been subsequently transformed into a dichotomous one, considering the median<sup>2</sup> of the pretax income as the reference score. If the company had a pretax income higher than the median, this variable was scored with the value "1"; otherwise, the value was "0".

Related to company size, it is assumed that larger companies can cause larger social and environmental impacts (Crisóstomo & Freire, 2015; Hahn & Kühnen, 2013). To measure the size, this work relied on the total number of employees in the 2016 fiscal year. The information has been obtained from the EIKON database. This variable has been subsequently transformed into a dichotomous one, considering as a reference point the median of the total number of employees. If the number of employees was above the median, the variable took the value "1" and below, the variable took the value "0". Note that, similarly to profitability, there was great variability between the number of employees of the largest companies on the sample and the number of companies with the lowest number of employees, despite the fact that 93.68% of the companies in the sample were large (i.e., more than 250 employees). For this reason, the median was established as the cut off value. Table 2.4 shows correlations as well as descriptive statistics.

Table 2.4: Correlations and descriptive statistics

| <i>N= 95 companies</i>            | <b>Mean</b> | <b>S.D.</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> |
|-----------------------------------|-------------|-------------|----------|----------|----------|----------|----------|----------|
| <b>1. Compliance GRI-G4</b>       | .490        | .503        | 1        |          |          |          |          |          |
| <b>2. Highly polluting sector</b> | .280        | .453        | .217*    | 1        |          |          |          |          |
| <b>3. Ownership structure</b>     | .550        | .500        | .033     | -.086    | 1        |          |          |          |
| <b>4. Reputation</b>              | .305        | .463        | .350*    | .241*    | .051     | 1        |          |          |
| <b>5. Profitability</b>           | .557        | .500        | .109     | .098     | -.487**  | -.007    | 1        |          |
| <b>6. Size</b>                    | .530        | .502        | -.137    | .029     | -.467**  | -.118    | 0.508**  | 1        |

Note. \*\*p<0.01 \*p<0.05

### 2.4.3 Techniques used

To empirically support the hypotheses, this work relied on two different techniques in nature: binary logistic regression for testing Hypothesis 1, Hypothesis 2, and Hypothesis 3 and qualitative comparative analysis (QCA) for testing the rest of hypotheses.

On the one hand, the individual effects of the three organizational characteristics on the sending of CSR signals were tested by using stepwise binary logistic regression. The non-linear nature of the logistic transformation requires that a procedure be used iteratively to estimate the coefficients more reliably than the one provided by the least squares' method (by minimizing the differences between real and predicted values), so that the value of the likelihood is used to calculate the goodness of the model (Hair et al., 1999). This technique is useful when it comes to predicting the relationship between a dichotomous dependent variable (in this work, sending of CSR signals through the compliance with GRI G4.0) and a set of explanatory variables. In the base model (step 1) the variables "operating in highly polluting sector" and "ownership structure" were included. In the full model (step 2), in addition to the aforementioned, size, profitability and corporate reputation were added.

On the other hand, it was run QCA for testing the hypotheses related to the effects of the simultaneous combination of the three organizational characteristics on sending CSR signals. QCA is based on the assumption that "*organizations are best understood as clusters of interconnected structures and practices, rather than as modular or loosely coupled entities whose components can be understood in isolation*" (Fiss, 2007, p.1180). By using QCA methodology it is possible to analyze the distinct combination of organizational characteristics and their relationship with the variable outcome (Fiss, 2007). QCA is a technique developed by

Ragin (1987), and it is especially suitable for studying the causal contribution of different configurations of conditions (in this case, operating in highly polluting sector, owned by a non-concentrated structure, and having a positive corporate reputation) to an outcome of interest (in this case, sending CSR signals). According to Delmas and Pekovic (2018, p.229) “QCA offers a means for addressing how sets of organizational elements in combination produce joint effect on performance. (...) instead of disaggregating cases into a number of independent variables, the QCA approach conceptualizes them as combinations of attributes presented by their set memberships”.

## 2.5. RESULTS

### 2.5.1 Binary logistic regression

The goodness to fit model is shown in Table 2.5 through the classification table. These results showed the successes between what has been predicted and what has been observed. In this case, the percentage of success of the classification was 68.2% for the full model. The minimum value requested in this table is 50% for a good measure of goodness to fit the model, so that the results obtained comply with the minimum required.

Table 2.5: Classification Table Full Model

|          |               | Predicted     |            | Correct % |
|----------|---------------|---------------|------------|-----------|
|          |               | No CSR Signal | CSR Signal |           |
| Observed | No CSR Signal | 27            | 13         | 67.5      |
|          | CSR Signal    | 14            | 31         | 68.9      |
| Global % |               |               |            | 68.2      |

Table 2.6 shows the results of binary logistic regression. The values  $R^2$  are especially useful when comparing the values of two models that use the same sample, being the best fit in those models with higher  $R^2$ . In this case, the increasing progression of the Nagelkerke  $R^2$  value (i.e.,  $R^2 = .166$  in the base model to  $R^2 = .238$  in the full model) showed that the inclusion of the variables size, profitability and reputation, improved the explanatory quality of the model. The estimated coefficients, that is, the values of the column called Exp (B) in Table 2.6, can be used to determine the odd ratio of each explanatory variable introduced in the model (Hair et al., 1999). Therefore, Exp (B) represents the relationship between change in the probability of the dependent variable (i.e., sending CSR signals) when there is a unit change in the explanatory variable in the case of being statistically significant.

An Exp (B) gives the odd ratio of the dependent variable. Prior studies that have used binary logistic regression (Neves & Albuquerque, 2019; Wuerges & Borba, 2014) considered that a positive relationship exists when the Exp (B) is higher than value “1”. If the value is below “1”, it reveals a negative relation between dependent and the explanatory variable. By exploring the variable operating in highly polluting sector ( $B = .646$ ;  $\text{Exp (B)} = 1.909$ ,  $p > .1$ ), no relationship is confirmed by the binary logistic regression. Consequently, Hypothesis 1 that stated sending CSR signals is positively related to operating in a highly polluting sector has not been supported. Similar to Hypothesis 1, Hypothesis 2 that stated sending CSR signals is positively related to non-concentrated ownership structure was not statistically supported since the relationship between the dependent variable and the level of concentration of the ownership structure is not statistically significant ( $B = .156$ ;  $\text{Exp (B)} = 1.169$ ,  $p > .1$ ).

Table 2.6: Results of Logistic Binary Regression

| <b>Dependent Variable: CSR signals</b> |                      |             |               |                      |             |               |
|----------------------------------------|----------------------|-------------|---------------|----------------------|-------------|---------------|
| <b>Explanatory Variables</b>           | <b>Base Model</b>    |             |               | <b>Full Model</b>    |             |               |
|                                        | <b>B</b>             | <b>S.D.</b> | <b>Exp(B)</b> | <b>B</b>             | <b>S.D.</b> | <b>Exp(B)</b> |
| <b>1. Highly polluting sector</b>      | 0.648                | 0.520       | 1.912         | 0.646                | 0.531       | 1.909         |
| <b>2. Ownership structure</b>          | 0.200                | 0.470       | 1.221         | 0.156                | 0.597       | 1.169         |
| <b>3. Corporate reputation</b>         | 1.398                | 0.520       | 4.048***      | 1.452                | 0.554       | 4.271***      |
| <b>4. Profitability</b>                |                      |             |               | 1.228                | 0.649       | 3.416*        |
| <b>5. Size</b>                         |                      |             |               | -1.211               | 0.670       | 0.298*        |
| <b>6. Constant</b>                     | -0.628               | 0.398       | 0.533         | -0.637               | 0.690       | 0.529         |
| <b>-2 log likelihood</b>               | 106.233 <sup>a</sup> |             |               | 100.876 <sup>a</sup> |             |               |
| <b>Cox &amp; Snell R<sup>2</sup></b>   | 0.125                |             |               | 0.178                |             |               |
| <b>Nagelkerke R<sup>2</sup></b>        | 0.166                |             |               | 0.238                |             |               |

Note. \*\*\* $p < 0.01$

\* $p < 0.1$

Hypothesis 3 that stated sending CSR signals is positively related to a positive corporate reputation has been supported as the relationship between the dependent variable and a positive corporate reputation was positive and statistically significant ( $B = 1.452$ ;  $\text{Exp}(B) = 4.271$ ,  $p < .01$ ), as Table 2.6 shows.

Furthermore, in relation to the control variables, on the one hand, results show a positive and statistically significant relation between sending CSR signals and profitability ( $B = 1.228$ ;  $\text{Exp}(B) = 3.416$ ,  $p < .1$ ). On the other hand, a negative and statistically significant relation between sending CSR signals and company's size ( $B = -1.211$ ;  $\text{Exp}(B) = 0.298$ ,  $p < .1$ ).

To sum up, results of the logistic regression showed that companies with positive corporate reputation tend to send CSR signal using the compliance of GRI G4.0 criteria in their non-financial reports. However, according to the sample, neither the concentration of ownership structure nor the type of sector in which the company operates are not statistically significant characteristics in isolation for determining the sending of CSR signals to society.

### 2.5.2 Qualitative Comparative Analysis (QCA)

The results of the QCA regarding the influence of the combination of the three organizational characteristics on sending CSR signals are shown in Table 2.7. Black points represent the presence of a condition while white points indicate the negation (or absence) of causal conditions. Blank spaces indicate the irrelevance of a condition. Table 2.7 exhibits two solutions achieving sufficient consistency for the entire sample. The consistency criteria mean the relation of the subsample that indicates a needed condition among variables. Following Ragin (2008), this work considered 0.75 as the minimum value for consistency. Furthermore, the coverage index indicates the gross odds of the results given by the solution. As Table 2.7 shows, the total solution (of all combinations of conditions) has a consistency of 0.86 and coverage of 0.39, indicating that in 86% of the cases in the outcome, have one of these combinations and that the solution accounts for a 39% of all cases with a result of state action, indicating that the most effective configurations explain a large proportion of sending CSR signals. Consistently to the findings of the binary logistic regression, no condition alone is sufficient to account for sending CSR signals, which means that configurations of organizational characteristics are associated with sending CSR signals rather than each organizational characteristic in isolation.

Configuration 1 suggests that companies that operate in a highly pollutant sector and that have a positive corporate reputation are members of the set of companies that send CSR signals. For companies in Configuration 1, the effect of the condition “*structure concentration*” on sending CSR signals is irrelevant. This configuration supports empirically the Hypothesis 4 that stated the combination of operating in a highly polluting sector and positive corporate reputation is associated with greater sending CSR signals than operating in a highly polluting sector or positive corporate reputation alone. The Spanish company “*Acciona*” is a good example of this configuration since it operates in the energy sector, and it has a positive corporate reputation, which lead to send CSR signals.

Since Hypotheses 5, 6 and 7 have not been supported by the full sample, it has been decided to split the sample according to the control variables: profitability and size. Results of this split are shown in the next section.

Table 2.7: QCA results

| Group              | Path number | Name of construct |           |            | Solution    |          |             |
|--------------------|-------------|-------------------|-----------|------------|-------------|----------|-------------|
|                    |             | Sector            | Structure | Reputation | Consistency | Coverage | Consistency |
| All the sample     | 1           | •                 |           | •          | 0.77        | 0.39     | 0.86        |
|                    | 2           |                   | •         | •          | 0.88        |          |             |
| More profitable    | 1           | •                 | o         | •          | 1           | 0.25     | 1           |
|                    | 2           | o                 | •         | •          | 1           |          |             |
| Less Profitable    | 1           |                   | •         | •          | 0.9         | 0.53     | 0.9         |
| Larger companies   | 1           | •                 | o         | •          | 1           | 0.18     | 1           |
|                    | 2           | o                 | •         | •          | 1           |          |             |
| Less big companies | 1           | o                 |           | •          | 1           | 0.5      | 0.92        |
|                    | 2           |                   | •         | •          | 0.91        |          |             |

Note. Black circles “•” indicate the presence of causal conditions. White circles “o” indicate the absence or negation of causal conditions. The blank cells represent “not significant for solution” condition. QCA = qualitative comparative analysis.

### 2.5.3 Additional tests

As results of the binary logistic regression showed that company’s profitability and size were significant to sending CSR signals, it was evaluated by four additional versions of the QCA model to analyze the robustness of this solution by splitting the sample according to different levels of profitability and company’s size respectively, which were the control variables in logistic regression. Results of these splits are shown in Table 2.7.

Focusing to the subsample of the “*more profitable*” companies, the findings suggest one causal path can be considered empirically significant. Configuration 1 combines operating on a highly polluting sector, a non-concentrated structure (i.e., absence of concentrated structure) and positive corporate reputation in companies with a superior size to the median of the sample. The total consistency is 1 and, according to the raw coverage, it covers the 25% of cases associated with the outcome on the subsample of the biggest companies. Thus, this result supports Hypothesis 7, which stated the combination of operating in a highly polluting sector, positive corporate reputation and non-concentrated ownership structure is associated with greater levels of sending CSR signals than each of these organizational characteristics alone. The Spanish oil company “*Repsol*” is a clear example of this organizational profile since it is a

company that operates in the energy sector, with a non-concentrated ownership structure and with a positive corporate reputation.

Focusing to the subsample of biggest companies, the findings suggest that one causal path can be considered as empirically significant. This configuration combines operating on a highly polluting sector, a non-concentrated structure (i.e., absence of non-concentrated structure) and a positive corporate reputation in companies with sizes superior to the median of the sample. ACS, a Spanish big company that operates in the infrastructures and construction sector with a concentrated ownership structure and a positive corporate reputation could serve as an example of this organizational profile. The total consistency is 1 and, according to the raw coverage it covers the 18% of cases associated with the outcome on the subsample of the biggest companies. Being similar to the most profitable subsample, Hypothesis 7 has been empirically supported.

These findings showed substantially different combinations of each path (comparing them to results of the entire sample) in function of the profitability and size. This fact highlighted that these organizational characteristics were essential to be incorporated in the analysis of the set of organizational characteristics that must meet to send CSR signals.

Overall, these results are consistent in showing sending CSR signals for a combination of organizational characteristics. In all the cases, reputation is combined with the other variables thus, indicating complementarity between these organizational characteristics. However, sector and ownership structure tend to be combined with reputation (one or two at a time), thus indicating potential substitutability between these characteristics.

## 2.6. CONCLUSIONS AND DISCUSSION

### 2.6.1 Theoretical contribution

Drawing upon the theoretical framework of *Signaling Theory* and *Neo-Institutionalism*, it is argued that sending CSR signals is the outcome of having a positive corporate reputation combined with other organizational characteristics, specifically, operating in highly polluting sector, having a non-concentrated ownership structure, company size, and the level of profitability. Also, it is discussed the ways in which configurations of the characteristics can facilitate the sending of CSR signals since the objective of this paper is to determine a set of the characteristics that distinguish the profile of those companies that decide to send signals about their CSR behavior.

The results have contributed to prior literature in several ways. Firstly, the findings have shown that a positive corporate reputation, size, and profitability are organizational characteristics that separately, are related to sending CSR signals via the compliance of GRI G4.0 standards in their non-financial reports. Furthermore, there is a set of organizational characteristics that by combining them, they could lead companies to be more inclined on sending CSR signals. Specifically in the sample the combination of operating in a highly polluting sector and having a positive corporate reputation is associated with sending CSR signals. Similarly, the results show that the combination of operating in a highly polluting sector, having a positive corporate reputation, and having a non-concentrated ownership structure is associated with sending CSR signals when larger size companies or high profitability exists. As a consequence, the findings provide additional support to the study of Hahn and Kühnen (2013), who argued that more empirical outputs about the determinants of sustainability reporting are needed due to inconclusive results. In fact, this work has gone beyond the recommendation of Hahn and Kühnen (2013) since it has been provided by the joint analysis of several organizational determinants, offering several behavioral profiles for the sending of CSR signals.

Secondly, the results have highlighted the key role of the positive corporate reputation as the basis for sending CSR signals. This finding supports prior literature that has analyzed the relation between corporate reputation and the disclosure on CSR information in isolation (i.e., Aldaz et al., 2015; Sotorrío & Sánchez, 2010). This work has advanced a step further in this issue, since the results showed that a positive corporate reputation is a necessary condition for sending CSR signals in combination with other organizational characteristics. This fact highlights the complementarity among organizational characteristics in order to send CSR signals thorough compliance of GRI standards. At this point, the results are in agreement with Delmas and Pekovic (2018, p.217) who argued that *“researchers need to open the organizational black box to understand how environmental practices interact with the organizational context in which they are implemented”*.

Moreover, related to Neo-Institutional Theory, it has added the value of understanding the main isomorphic behaviors' that may be happening concerning organizational characteristics. Those processes of isomorphism could lead to take the adoption of GRI as a homogenized standard in both: Those countries in which non-financial reporting is a mandatory requirement and countries in which it is not already mandatory. Prior literature based on Neo-Institutional Theory has argued that CSR reporting could constitute a competitive advantage based on differentiation (Shabana et al., 2017). However, this work argues that to do this kind of reporting is already a coercive isomorphism in some regions (as in the EU). Therefore, as it turned into mandatory, this fact could not lead the activity of sharing CSR reports to be a competitive advantage based on differentiation anymore.

Finally, this work has paid special attention about which organizational determinants could characterize environmental reporting by using a combined methodological approach formed by binary logistic regression and QCA technique. From a methodological perspective, by employing QCA the results have contributed to a better understanding of which organizational characteristics must be combined when sending CSR signals. QCA is a method especially useful for understanding the drives and impact in the adoption of CSR practices due to the multifaceted nature of the concept (Delmas & Pekovic, 2018).

### 2.6.2 Implications for practitioners and regulators

The results of this work have interesting implications for both managers and public regulators. From the point of view of practitioners, it is shown that the GRI standards have become a benchmark to follow in environmental matters for companies with positive corporate reputations. Since well-recognized companies tend to use GRI standards as a CSR signal, this fact can be understood as a tool for attracting and retaining talented employees, since complying with GRI standards can be interpreted as being more transparent for society. On the other hand, CSR signals through GRI standards are usually reliable so it can serve first, to respond to the environmental information demands of its stakeholders and second, to legitimize company actions and thus, improve corporate reputation. These circumstances can help companies achieve better conditions and to obtain greater profitability. For public regulators and promoters of GRI, the results of this work are especially interesting, since they demonstrate that CSR reports through GRI can be used to encourage companies to adhere to higher levels of compliance and thus improve its transparency, even if it is changed into a coercive isomorphism for the case of EU. In addition, by adhering to a higher level of disclosure for industry regulators and other companies, it could convince others to adopt the same strategy in order to have the higher performances, by mimetic isomorphism in the case of non-EU countries, where it could not be mandatory to publish non-financial reports.

### 2.6.3 Limitations

This work is not exempt from limitations that can be solved in future papers. First, the results are based on a sample of 95 companies operating in Spain. It would be obvious and advisable to expand the current sample globally in order to find a greater generalization on an international level. Second, concerning the variables that have not been empirically supported, future research may be required in developing additional analysis that corroborate the results. For instance, in the case of the degree of concentration of the ownership structure, the results have not supported empirically that there is a positive relationship between sending CSR signals and the concentration of the ownership structure. It is important to note that it has been established a criterion that may have been conservative in excess when determining the degree of concentration (i.e., 20%). Consequently, in future research this limit could be lower.

Third, connected with the previous limitation, this paper has considered only the environmental sensitivity of the sectors (that is, this work is focused only on the environmental aspect from a broader concept of CSR), presenting that highly polluting sectors are environmentally sensitive while, less polluting sectors are not. However, other social factors that can characterize the sensitivity of some sectors, such as the level of corruption or the use of child labor, have not been considered in this work. These social aspects have been left out of this analysis, but it is essential to be aware that the inclusion of them to measure the CSR sensitivity of the industry could change the current findings of this research (i.e., that H1 went from being unsupported to being supported when social aspects were considered). Future studies will be in charge of analyzing this type of CSR sensitivity instead of only considering environmental impacts.

Finally, this work has studied various organizational characteristics although other variables that may influence the sending of CSR signals might be highly interesting. They could be: (1) The types of legal forms, e.g., are public limited companies more likely to send out CSR signals than private companies; (2) The degree of concentration in the sector, e.g., do companies in highly competitive sectors that have more aggressive competition have a tendency to send a greater number of CSR signals?; (3) The characteristics of managers, e.g., what attributes do executives who are inclined to send CSR signals comply with?; (4) The degree of diversification of the sectors in which they operate, e.g., does greater diversification, lead to a willingness to send CSR signals?; (5) The degree of company's innovation, e.g., are innovative companies interested in sending CSR signals in a greater extent than non-innovative companies?, among others.

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#### Endnotes

1: The adverse selection is related to the description of situations in which men of information cannot distinguish the good or bad quality of what is offered by another agent (Requejo, 2001).

2: Note that the median has been established as a reference since there is a great variability in the values "*income before taxes*" of the sample and this makes the arithmetic mean not a representative reference point.

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## 2. SENDING CORPORATE SOCIAL RESPONSIBILITY SIGNALS

### 3.

#### GREEN PUBLIC PROCUREMENT AS AN EFFECTIVE WAY FOR SUSTAINABLE DEVELOPMENT: A SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

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### 3. GREEN PUBLIC PROCUREMENT AND SUSTAINABLE DEVELOPMENT

### 3 GREEN PUBLIC PROCUREMENT AS AN EFFECTIVE WAY FOR SUSTAINABLE DEVELOPMENT: A SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

#### 3.1. ABSTRACT

Green Public Procurement (GPP) has emerged as a strategic tool for sustainable development. However, the drivers and barriers to effective GPP implementation remain unclear. Additionally, the growing volume of GPP research necessitates interlinking with sustainability concepts, such as sustainable development, to guide future research. This paper presents a systematic literature review and bibliometric analysis of GPP research between 2003 and 2023 to identify key themes, trends, and research gaps. A dataset of 201 documents retrieved from the Web of Science database was analyzed using *CitNetExplorer* and *VOSViewer*. By analysing prior literature on the effect of GPP on the achievement of sustainable development, we have found, among others concerns, that: (1) richer qualitative analysis on GPP is needed, (2) there is a gap in understanding localized factors influencing GPP in developing countries, and (3) the transformative role of digitalization in promoting social and environmental outcomes in GPP is an essential factor. These findings will inform policymakers, practitioners, and researchers on the effective implementation of GPP for sustainable development.

#### 3.2. INTRODUCTION

Pursuing sustainability requires active collaboration from multiple actors (Preuss, 2007). Private companies can employ various strategies to enhance operational efficiency and design eco-friendly products (Steger, 2004), alongside other initiatives and management practices. On the demand side, consumers play a crucial role by advocating for greener production and more ethical corporate behavior through their purchasing decisions (Peattie, 2001). Additionally, governments and public authorities (PAs) can implement directives and policies aimed at promoting sustainability across all sectors, including public procurement (Thomson & Jackson, 2007).

In the pre-COVID era, public procurement accounted for 12% of the GDP in OECD countries and almost 30% in developing countries, accounting for more than 30% of total government spending (OECD, 2019). In fact, wise choices in terms of public spending can affect consumption, thus changing the perception of private consumers and the availability of sustainable goods and services (Preuss 2007; Michesen & De Boer, 2009). Green public procurement (GPP) gives governments the dual role of acting as purchasers and policy makers at the same time while using their power to advance social justice (McCrudden, 2004). Therefore, GPP could play a prominent role in supporting PA's actions towards a more sustainable socioeconomic system.

Analyzing how GPP practices can favor the achievement of Sustainable Development (SD) goals is essential because of the crucial role of the consumption phase (Camacho-Otero et al., 2018; Tunn et al., 2019). Sustainable consumption has been identified as one of the essential requirements for sustainable development (Wang et al., 2019). Consumption, to be sustainable, should focus on the environmental and social effects of related choices (Liu et al., 2017; Wong et al., 2024). There are several ways to foster sustainable consumption. For instance, establishing a positive relationship between the consumer and production sides through informing consumers about sustainable issues related to the products has been proven to create a long-term commitment to sustainability consumption (Weber et al., 2021). Consumers are often regarded as individuals; however, public purchasers also play an important role in pursuing SD (Chersan et al., 2020).

Green Public Procurement (GPP) has garnered significant scholarly attention in recent decades. The extensive body of research has necessitated various systematization efforts, leading to the development of several systematic literature reviews (SLRs). These reviews focus on different aspects of GPP, such as internal dynamics, external drivers, and the associated benefits. Key areas of focus include the strategic role of public procurement for organizations, incorporating sustainability dimensions (Guarnieri & Gomes, 2019); drivers and barriers to GPP adoption (Chersan et al., 2020); practices, uptake issues, effectiveness, and regulatory concerns (Cheng et al., 2018); and the role of e-government in advancing GPP in developing countries (Adjei-Bamfo et al., 2019).

Authors have also conducted bibliometric analyses (BAs) mainly for descriptive purposes, focusing on identifying key aspects such as frequently used keywords, influential authors, prominent universities, and dominant research areas (Pătărlăgeanu et al., 2020; Rejeb et al., 2023). These studies have contributed to a better understanding of the academic landscape surrounding GPP, but they often lack deeper insights into the underlying conceptual and thematic developments. In particular, how GPP can contribute to pursuing sustainability equilibrium by combining social, economic, and environmental goals remains unexplored.

Thus, the objective of this work is twofold. First, we aim to identify the key concepts, scholars, countries, and organizations that have contributed to the study of GPP in general, with a specific focus on its relationship with sustainable development (SD), stressing facilitating and hindering factors of the role of GPP towards a SD. Second, based on these findings, we seek to identify emerging trends and future research directions regarding the impact of GPP on achieving SD goals. To achieve these objectives, we conducted a bibliometric analysis (Broadus, 1987), which offered clear insights and an overview of the leading trends in the field (Bonilla et al., 2015). This was complemented by a systematic literature review to highlight the interconnections between key components within the research areas (Börner & Polley, 2014; Khizar et al., 2021). Our final sample comprises 201 documents covering the period from 2003—just before the publication of the EU’s first directive on this subject—up to 2023. As a result, our analysis of the GPP literature provides at least five contributions. First, we highlight the need for more robust research methodologies that combine qualitative and quantitative approaches. Second, we identify a gap in understanding localized factors influencing GPP in non-traditional contexts, such as developing countries, emphasizing the need for context-sensitive strategies. Third, we identify various organizational barriers that hinder GPP adoption to achieve sustainable development. Fourth, we highlight the potential for digitalization in the GPP and the lack of comprehensive research in this area. Lastly, we reveal the connection between the GPP and societal goals, particularly healthcare, signaling a shift towards more inclusive and sustainable procurement practices.

This work is structured as follows. Section 3 presents GPP, its relationship with SD, and the research questions. Section 4 outlines the research methodology of the bibliometric analysis and the systematic literature review. In section 5 we offer the main findings of the bibliometric analysis and relevant descriptive statistics. Also, in Section 6 presents the main findings of the systematic literature review, including an original contribution and classification of factors and features associated with GPP. Finally, in Section 7, we discuss the results and propose future research streams, drawing conclusions and reporting the study limitations.

#### **3.3. THEORETICAL DEVELOPMENT**

##### **3.3.1 Green Public Procurement and the role of the public sector**

In 2011, the European Union (EU) defined GPP as “*a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that*

would otherwise be procured” (European Commission, 2011:4). Although the EU’s commitment to sustainable public procurement originated in the 1996 “Green Paper” (European Commission). The “Helsinki Concordia Bus case” (Nash, 2009) affirmed the legitimacy of public authorities (PAs) using ecological criteria in contract awards. Principles included relevance to the contract, limited PA choice, explicit criterion declaration, and non-discrimination. In 2004, Directives 2004/18/EC and 2004/17/EC urged environmental consideration in procurement (Official Journal of the European Union, 30 April 2004, 134). 2014 brought Directives 23 and 24, simplifying and enhancing flexibility, replacing 2004/18/EC. Directive 2014/25/EU covered Green Public Procurement (GPP) in water, energy, transport and postal services. These rules sought to embed societal goals that encompass environmental protection, social responsibility, innovation, climate change mitigation, employment, public health, and other social and environmental considerations.

The GPP has not only been developed within the EU. For instance, a recent comparison (Iannone et al., 2019) highlighted that GPP plays a fundamental role in China, where it is part of the national 12th five-year action plan (2011-2015) (Qiao & Wang; 2011; UNEP, 2017, Wang et al., 2020; Wu et al., 2014). In Japan, the EcoMark Programme was launched in 1989, which provided compulsory green purchasing for government agencies and entities subject to it (Ministry of Environment of Japan, 2016; UNEP, 2017). In the United States, where most initiatives are left to local authorities, an Environmental Preferable Purchasing (EPP) program recommends that federal bodies include elements of environmental preference in contract awarding lasting more than 20 years (Iannone et al., 2019).

Analyzing the factors that influence GPP is essential for direct and indirect approaches to social and environmental goals (Brammer & Walker, 2011). Stimulating social and environmental concerns by pressing suppliers to reduce their impacts illustrates an indirect approach (Brammer & Walker, 2011), while an example of a direct approach is measuring the impact of public procurement to improve the performance of a region in terms of long-term unemployment (Erridge & Henningan, 2006). In the academic literature, there is more research on indirect approaches than direct ones. More research on the direct influence of GPP is needed as well as more comparative studies across products, sectors, countries, and regions (Brammer & Walker, 2011).

#### 3.3.2 SD and GPP

SD encompasses the achievement of economic, social, and environmental goals (Liu et al., 2017). GPP offers a strategic approach for public authorities to embed environmental considerations throughout the life cycle of procured goods, services, and works (De Giacomo et al., 2019). This involves integrating criteria like resource efficiency, minimized waste generation, reduced emissions, and lower energy consumption within the purchasing decision-making process. As such, GPP serves as a powerful tool for promoting SD (Appolloni et al., 2019; Chersan et al., 2020; Manta et al., 2022) by leveraging the substantial purchasing power of the public sector to drive market transformation towards more environmentally friendly product and service offerings (Alhola et al., 2019; Morgan & Morley, 2014; Preuss, 2009).

Beyond environmental benefits, GPPs foster significant economic and social benefits. Studies demonstrate cost savings for public authorities through reduced energy and water consumption, along with improved product durability achieved through GPP implementation (Preuss, 2009). Furthermore, GPP fosters job creation in the green economy and enhances citizen well-being by mitigating air and water pollution (McCrudden, 2004; Sönnichsen & Clement, 2020). However, realizing the full potential of GPP requires addressing several challenges (Behravesh et al., 2022). Limited awareness of GPPs among public sector decision makers can hinder their implementation. Developing clear, consistent GPP criteria across different product categories

is an ongoing effort. Additionally, building public authorities' capacity for effective GPP implementation requires targeted training and resource allocation (Testa et al., 2016). Despite these challenges, the potential benefits of the GPP are undeniable, as it enables governments and public institutions to significantly contribute to achieving several Sustainable Development Goals (SDGs) (Appolloni et al., 2019; Manta et al., 2022). By strategically leveraging public procurement power, public authorities can promote innovation in sustainable product development and market shift towards a more environmentally responsible future (Uehara, 2020).

Up to now, in the academic arena, few literature reviews on GPP have been conducted (Adjei-Bamfo et al., 2019; Chersan et al., 2020; Guarnieri and Gomes (2019), with the notable exception of the review elaborated by Cheng et al. (2018), which, however, covered until 2016. Pătărlăgeanu et al. (2020) conducted a bibliometric analysis, and Rejeb et al. (2023) conducted a bibliometric analysis until 2021. Consequently, the current landscape of GPP research remains incomplete, with the purpose being to analyze its impact on SD achievement. Our research questions are as follows:

- RQ1a: What are the main concepts regarding the GPP, the authors, countries, and affiliations?
- RQ1b: What are the main facilitating and hindering factors of GPP regarding the achievement of SD?
- RQ2: What are the future research directions and emerging trends regarding GPP and its effect on SD?

### **3.4. RESEARCH METHODOLOGY**

#### **3.4.1 Literature review protocol**

A literature review is defined as “a systematic strategy for researching, selecting, and synthesizing previous research” (Moosavi, et al., 2021:3). It plays a central role in academic research in gathering existing knowledge and insights and reflecting state-of-the-art (Cropanzano, 2009). Linnenluecke et al. (2020:3) stated that a literature review could help by “establishing a context and delimiting a research problem; seeking theoretical support; rationalizing a problem and new lines of enquiry; [...] and avoiding fruitless research”.

We followed the four-step method proposed by Coalter and Tchangalova (2020): (1) identify the research questions, (2) define the barriers, (3) search and select the studies and bibliometric analysis, and (4) present the results. Moreover, we merged the Coalter and Tchangalova (2020) approach with the PRISMA 2020 methodology exposed by Page et al. (2021), where they proposed a comprehensive approach involving literature review and development and improvement guidance based on the former PRISMA (Liberati et al., 2009; Page et al. 2021). To define a specific framework for delimiting the research, we followed Seuring and Muller (2008). First, we used two databases: “Web of Science” (WoS) and Scopus. Both tools are considered comprehensive databases that contain high-quality studies (Gao & Guo, 2014), and they are widely used in literature review (Mubako, 2018). This double extraction ensures robustness because they are the two major and most comprehensive sources of publication metadata and impact indicators (Pranckutė, 2021). Second, regarding the keywords, we went slightly beyond mere “Green Public Procurement” because in some geographical areas (i.e., USA) the expression “Sustainable Public Procurement” is also used frequently. Third, related to the delimitation of the search period, we searched works published since 2000. This is due to the option provided by the databases. We conducted our final search in June 2024 and therefore decided to include works published until the end of 2023. This approach was adopted

to ensure consistency and homogeneity in the analysis. Fourth, we included: articles, early access works, and reviews written in English.

Table 3.1 lists the main characteristics of the proposed search protocol. Fifth, we selected topics to be included in the advanced search. We selected all variables directly related to GPP or Sustainable Public Procurement. In some regions, it is more frequently used Sustainable Public Procurement (US) than Green Public Procurement (EU). We also checked the list of topics in WoS and Scopus one by one because relevant works could not be detected in the first round. We manually checked ‘Sustainable Purchas\*’, and ‘Sustainable Procurement’ as topics for search because many studies in reference to the public sector have included these two words (i.e., Walker & Brammer, 2012).

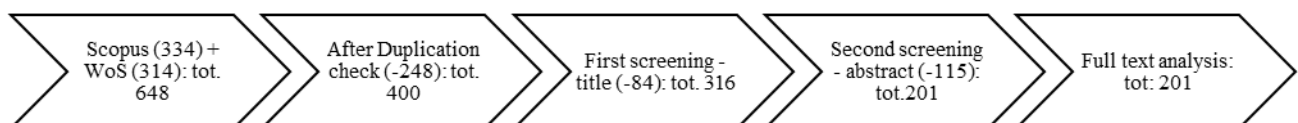
Table 3.1: Characteristics of the research and query

|                           |                                                                                                                                                                                                                                                                               |                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>Database:</b>          | Web of Science (WoS), Scopus                                                                                                                                                                                                                                                  |                             |
| <b>Period:</b>            | 2000–2023 *(01/08/2024 last search)                                                                                                                                                                                                                                           |                             |
| <b>Type of Documents:</b> | Articles, Early Access, and Review Articles                                                                                                                                                                                                                                   |                             |
| <b>Language :</b>         | English                                                                                                                                                                                                                                                                       |                             |
| <b>Topics/Keywords:</b>   |                                                                                                                                                                                                                                                                               |                             |
|                           | Green Public Procurement                                                                                                                                                                                                                                                      | Green Public Purchas*       |
|                           | Sustainable Public Procurement                                                                                                                                                                                                                                                | Sustainable Public Purchas* |
|                           | Sustainable Public Policy                                                                                                                                                                                                                                                     |                             |
| <b>Advanced Search:</b>   |                                                                                                                                                                                                                                                                               |                             |
|                           | (TS = ("Green Public Purchas*" OR "Green Public Procurement" OR "Sustainable Public Purchas*" OR "Sustainable Public Procurement" OR "Sustainable Procurement Policy") AND PY = ("2000-2022")) AND (DT=("Article" OR "Early Access" OR "Review Articles") AND LA=("English")) |                             |

### Articles selection

Our initial database was composed of 648 articles organized into a shared spreadsheet. The first step is to detect and remove duplicates. This step was performed by two researchers, who split the total database and then exchanged the work done for a control check. The two researchers then worked simultaneously on the article's title, excluding 84 articles from the database. The second screen was performed by carefully analyzing the abstracts of the articles. In order to perform the title and abstract analyses, we only applied the exclusion criteria (=not relevant to the field of GPP/SPP). Both team members categorized each article into one of the following three groups: relevant (green), irrelevant (red), and unclear (yellow). Regarding unclear articles with related doubts about inclusion, both researchers, after reading the entire article, decided whether to include it. We decided to exclude 115 articles, mainly due to not adherence to the GPP field, but also to minor errors (>5) in the functioning of the databases (i.e., language different from English). Even if some scholars have done so in the literature review, we decided not to perform a qualitative assessment of the articles or to exclude articles based on their journals. Two independent researchers read the titles and abstracts. This step generated a database of 201 final documents for the full-text analysis. Figure 3.1 illustrates the process of adding and subtracting documents from the database according to the PRISMA diagram (Liberati et al., 2009; Page et al., 2021).

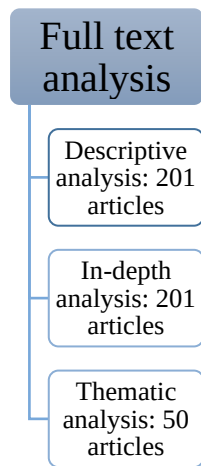
Figure 3.1. Extraction and selection processes based on the PRISMA diagram



### **Full text analysis**

The full text analysis phase was carried out in three stages: descriptive, in-depth, and thematic analysis (Tranfield et al., 2003). The results are shown in Figure 3.2. The descriptive analysis organized the information into categories based on the journals that were included, the period covered, and the geographical distribution of the data. The in-depth analysis foresaw an assessment of 14 parameters, ranging from the type of articles, sources of data, hypotheses, population, unit of analysis, drivers, barriers, and KPI, with a residual category for collecting other information. We added these columns to the spreadsheet matrix to categorize the information within the papers and aggregate them for the GPP and SD analyses. In the third phase of the thematic analysis, a small SLR was performed on the 201 articles from the database. We searched the term ‘*Sustainable Development*’ within its title and abstract. Therefore, we obtained 50 articles that linked GPP and SD. However, we decided to go further into the details and read the abstract, and it was determined that only 14 articles had a clear relationship between GPP and SD. This can be checked in Appendix 3A.

Figure 3.2: Process of article extraction and selection based on the PRISMA diagram



### **3.4.2 Bibliometric analysis**

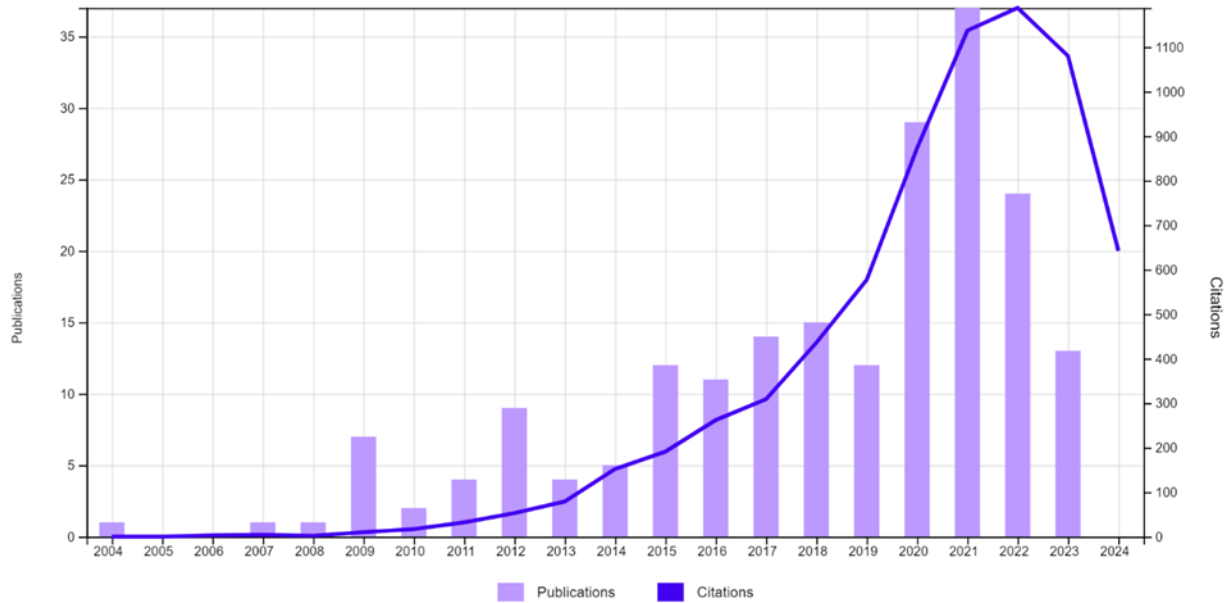
Several methods are commonly used for prior literature analysis. Ellegaard and Wallin (2015) highlighted that bibliometric and citation analysis has been consistently established as a research evaluation strategy, particularly for cases that analyze content and networks. Bibliometrics enable quantitative analysis of academic documents quantitatively (Mayr et al., 2014). The use of bibliometrics in a systematic literature review highlights the connection between the key components of research areas are connected (Börner & Polley, 2014). Accordingly, researchers have used software such as *VOSviewer*, *CitNetExplorer*, and *SciMat*, among others, to visualise bibliometric analysis. We presented the data using two visualisation programmes: *VOSviewer* and *CitNetExplorer*. *VOSviewer* displays large bibliometric maps in an easy-to-interpret way (Van Eck & Waltman, 2010) and shows distance-based visualizations of bibliometric networks that emerge from the analysis (Majerova et al., 2021). *CitNetExplorer* clusters publications, shows the relationships between articles, and analyzes individual publications within the same cluster (Van Eck and Waltman, 2017). Results obtained from these softwares revealed the state of development and the main trends from the point of view of influence from the major journals, works, topics, authors, institutions, and countries. We also conducted co-occurrence analysis. After selecting WoS as the source and uploading the plain text file, the two software applications provided all types of analyses that we conducted.

### 3.5. RESULTS

#### 3.5.1 Bibliometric analysis

Our database contains 201 articles published in high-impact journals. Figure 3.3 illustrates the evolution of the number of documents and citations collected from 2000 until the end of 2023 with reference to the field of GPP. Although our algorithm covers the period of 2000-2023, the first publication appeared in 2004 (McCrudden, 2004). Hence, even if the figures show later stages, the beginning of the field was marked on that year.

Figure 3.3: Number of documents and citations in our sample (2000-2023)



Source: Extracted from the results of our database

The analysis of the results of the bibliometric study provides an answer to RQ1a, that is, the main works, journals, scholars, countries, and organisations that/who have studied GPP. Concerning the main studies on GPP, we identified those that have been most cited. Table 3.2 shows the top ten works over time in terms of the total number of citations for the period 2000-2023.

Related to academic journals, we analysed the impact and relevance of GPP in journals that published at least four works on GPP during the analysis period. The main academic journals are listed in Table 3.3. The main contributors are “*Sustainability*”, “*Journal of Cleaner Production*”, “*Journal of Public Procurement*”, “*Ecological Economics*” and “*Journal of Purchasing and Supply Management*” with a minimum of five works each. These five journals (of the 80) published a total of 46.27% of the dataset.

### 3. GREEN PUBLIC PROCUREMENT AND SUSTAINABLE DEVELOPMENT

Table 3.2: Top 10 articles in the field of GPP and number of citations

| Title                                                                                                                         | Authors                                           | Source Title                                                | Publication Year | Total Citations | Average per Year |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|------------------|-----------------|------------------|
| Towards a more Circular Economy: Proposing a framework linking sustainable public procurement and sustainable business models | Witjes, S; Lozano, R                              | Resources, Conservation & Recycling                         | 2016             | 377             | 41,89            |
| Sustainable procurement in the public sector: an international comparative study                                              | Brammer, S; Walker, H                             | International Journal of Operations & Production Management | 2011             | 374             | 26,71            |
| Sustainable procurement in the United Kingdom public sector                                                                   | Walker, H; Brammer, S                             | Supply Chain Management-An International Journal            | 2009             | 304             | 19               |
| Using public procurement to achieve social outcomes                                                                           | McCrudden, C                                      | Natural Resources Forum                                     | 2004             | 263             | 12,52            |
| Addressing sustainable development through public procurement: the case of local government                                   | Preuss, L                                         | Supply Chain Management-An International Journal            | 2009             | 191             | 11,94            |
| Drawbacks and opportunities of green public procurement: an effective tool for sustainable production                         | Testa, F; Annunziata, E; Iraldo, F; Frey, M       | Journal of Cleaner Production                               | 2016             | 158             | 17,56            |
| The relationship between sustainable procurement and e-procurement in the public sector                                       | Walker, H; Brammer, S                             | International Journal of Production Economics               | 2012             | 153             | 11,77            |
| What factors influence the uptake of GPP (green public procurement) practices? New evidence from an Italian survey            | Testa, F; Iraldo, F; Frey, M; Daddi, T            | Ecological Economics                                        | 2012             | 152             | 11,69            |
| Exploiting the Potential of Public Procurement: Opportunities for Circular Economy                                            | Alhola, K; Ryding, S.O; Salmenpera, H; Busch, N.J | Journal of Industrial Ecology                               | 2019             | 119             | 19,83            |
| Green procurement in Norway; a survey of practices at the municipal and county level                                          | Michelsen, O; de Boer, L                          | Journal of Environmental Management                         | 2009             | 117             | 7,31             |

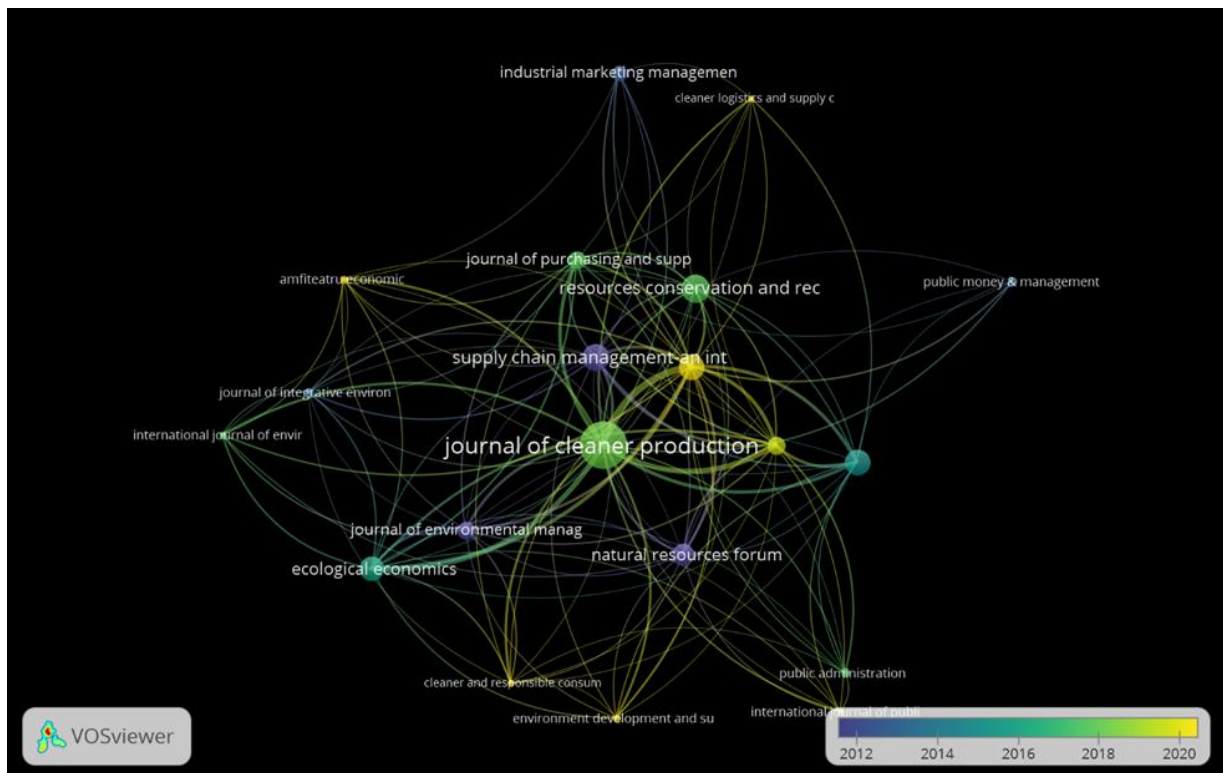
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Table 3.3: Main sources of documents from the sample (min. 3 docs)

| Journal                                                      | Editorial | Number of Documents | % of total |
|--------------------------------------------------------------|-----------|---------------------|------------|
| 1- Sustainability                                            | MDPI      | 32                  | 15.92%     |
| 2- Journal of Cleaner Production                             | Elsevier  | 31                  | 15.42%     |
| 3- Journal of Public Procurement                             | Emerald   | 15                  | 7.46%      |
| 4- Ecological Economics                                      | Elsevier  | 7                   | 3.48%      |
| 5- Journal of Purchasing and Supply Management               | Elsevier  | 5                   | 2.49%      |
| 6- Amfiteatru Economic                                       | DOAJ Seal | 3                   | 1.49%      |
| 7- Environment Development and Sustainability                | Springer  | 3                   | 1.49%      |
| 8- International Journal of Operations Production Management | Emerald   | 3                   | 1.49%      |
| 9- International Journal of Public Sector Management         | Emerald   | 3                   | 1.49%      |
| 10- Resources, Conservation and Recycling                    | Elsevier  | 3                   | 1.49%      |

Furthermore, Figure 3.4 shows four areas with significant impacts during the period studied. The dark blue points indicate two journals that were precursors in publishing on GPP: “*Supply Chain Management: an International Journal*” that led the way on the GPP field and was one of the first to receive recognition on the topic, and “*Ecological Economics*” that has had a high impact since GPP became a discipline. “*Journal of Cleaner Production*”, and to a lesser extent “*Resources, Conservation and Recycling*” and the “*Journal of Purchasing and Supply Management*” (green points) are the leaders in GPP publications in terms of relevance and recent impact. These are those that establish a clear framework path. The yellow points of journals, such as “*Sustainability*”, have increased in relevance in terms of the number of documents and citations since 2018.

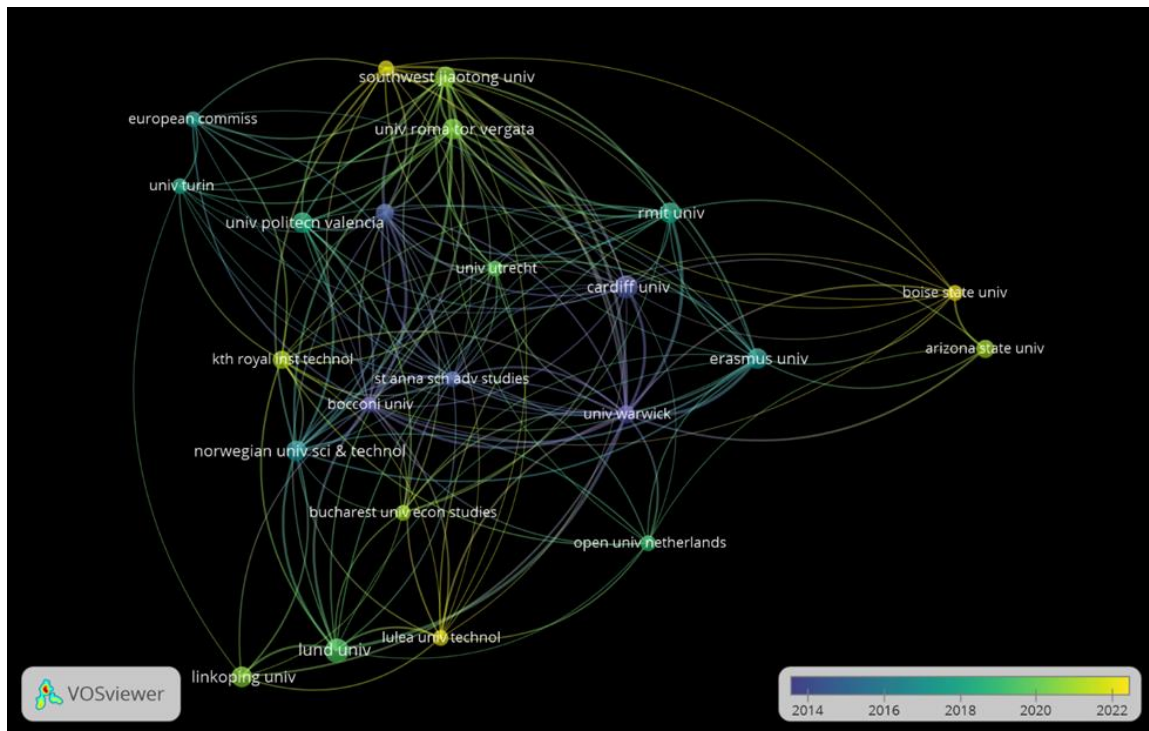
Figure 3.4: Importance of relationships between sources over time



Source: Map generated by VOSViewer based on the sample

Related to the work's precedence, this relates to the details on the countries or institutions (e.g., universities, research centres, research institutes) of the authors who elaborated on the research (Galjanić et al., 2022). For institutional analysis in VOSviewer, we chose "organisations" as the citation analysis type, with "citations" as weights and "average per publication/year" as scores. Figure 3.5 shows the impact per year when colour denotes year or publication (i.e., lighter shades denoting recent publications), and circle size reflects relevance in overall citations (i.e., smaller circles represent less relevant institutions). These criteria identified distinct main groups. The dark blue points represent the main institutions that began working on GPP, that is, "Cardiff University" and "University of Warwick" (i.e., Preuss, 2009; Walker & Brammer, 2009, 2013; Brammer & Walker, 2011). The Italian universities "Bocconi University" and "Scuola Superiore Sant'Anna" (both in light blue points) are followers in terms of relevance and a couple of years after the start (i.e., Testa et al., 2012; Testa et al., 2016). The groups represented as yellow points are the most relevant ones: "Lund University", "Arizona State University" and "Universitat Politècnica de Valencia" (i.e., Montalbán-Domingo et al., 2020; Kadefors et al., 2021; Hafsa et al., 2021).

Figure 3.5: Links and importance of relationships between institutional sources

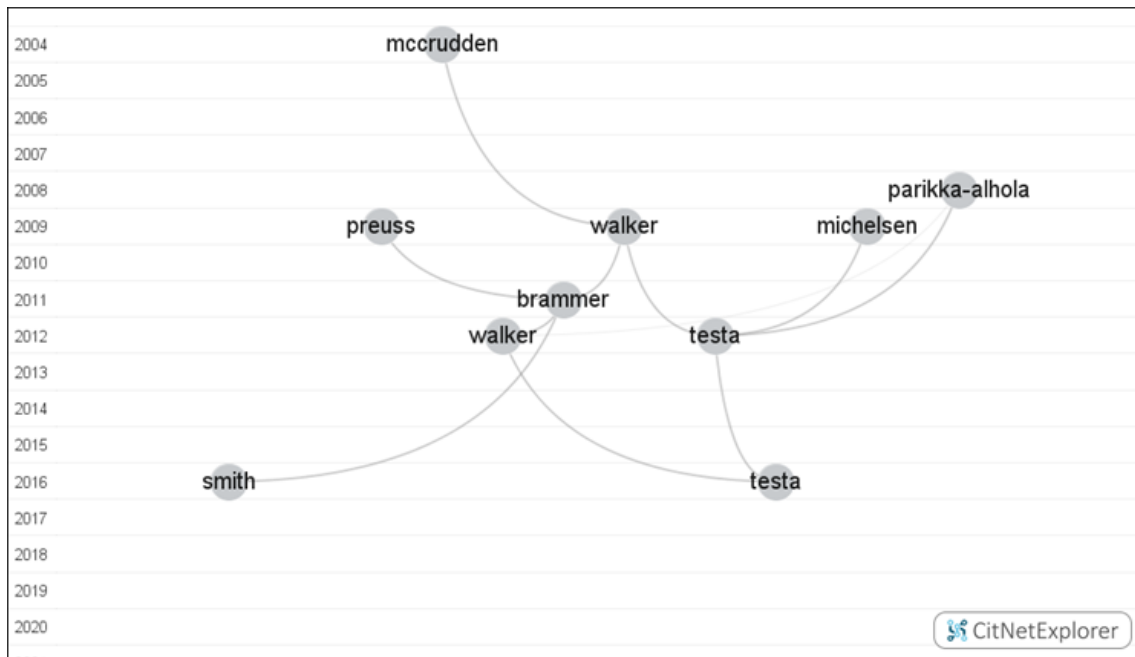


Source: Map generated by VOSViewer based on the sample

Finally, related to who the main authors are investigating in GPP, *CitNetExplorer* has been traditionally used to present the main publications across topics in academia. With this tool, connections between citations from the 10 main works in the field can be highlighted. Figure 3.6 shows these works for the GPP case, illustrating the time evolution of the main works. The first author's last name is shown, and each circle represents a work. The vertical axis indicates the year of publication, and the horizontal axis shows the level of connection between works. The main works with direct and indirect relations are closer to each other on the horizontal plane (Van Eck & Waltman, 2017). Figure 3.6 shows that the pioneer in the field is McCrudden (2004), who is at the top. McCrudden's study related GPP to achievement of social outcomes. Figure 3.6 also shows the group composed of four works that consolidated the field, namely,

Parikka-Alhola et al. (2008). Walker and Brammer (2009), Preuss (2009), and Michelsen and de Boer (2009).

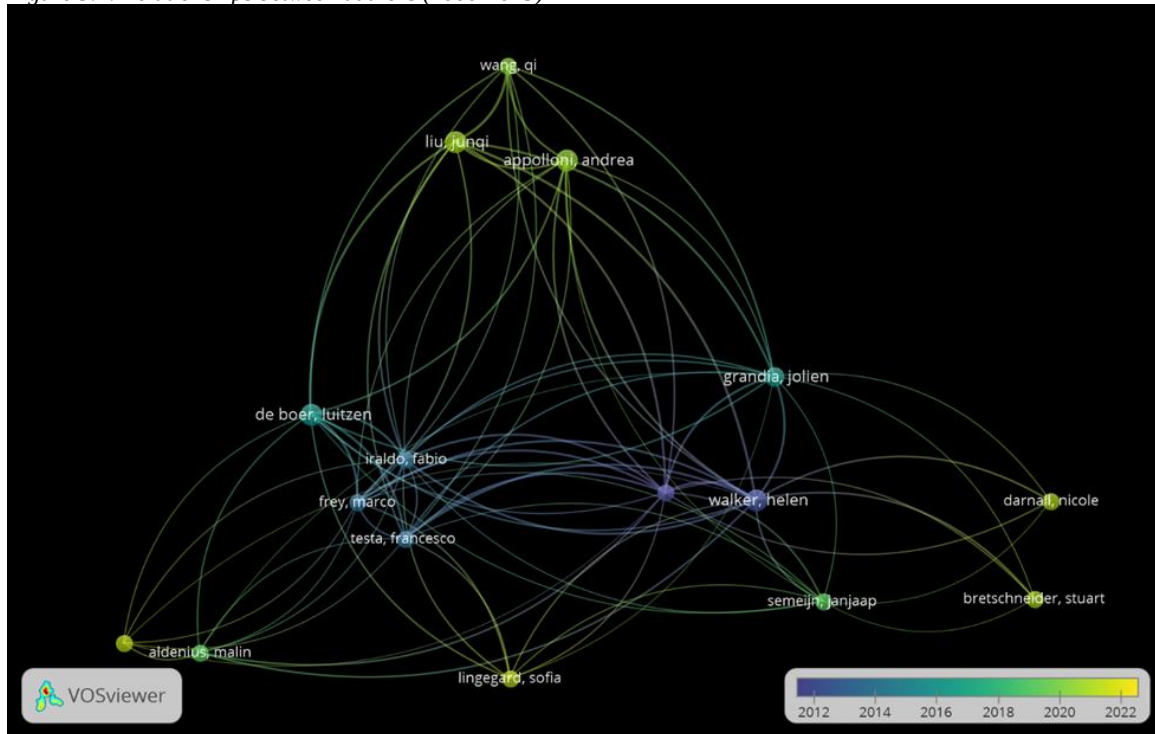
Figure 3.6: Evolution of GPP from 2000 to 2023, highlighting the first author and the links between authors



Source: Map generated by CitNetExplorer based on the sample

Figure 3.7 shows the five groups of authors that emerged regarding GPP research. The purple group are “the originators”, that is, Walker and Brammer who elaborated on the foundational works and had the highest overall number of citations (Walker & Brammer, 2009, 2013; Brammer & Walker, 2011). The dark blue group is “the Italian School”: Iraldo, Frey, and Testa, who usually work together (Testa et al., 2012; Testa et al., 2016), have created a strong cluster in GPP research, generating knowledge from the Italian context. Note that de Boer is also involved in the cluster with four key works in the field (i.e., Michelsen & de Boer, 2009; Igarashi et al. 2017). The lighter blue group is composed of international collaborators: Luitzen de Boer usually work on the field GPP in the Norwegian context (i.e., Igarashi et al., 2017; Michelsen & de Boer et al., 2009). Grandia, from the Dutch school, published a total of five relevant works in our sample, with a significant impact on the field of GPP research (i.e., Grandia et al., 2015; Grandia, 2016). The reinforcing group (green point) is formed by Liu and Wang, who usually research and publish together in the Chinese context (i.e., Liu et al., 2019; Wand et al., 2020). Aldenius is another relevant author on GPP, working from a Swedish perspective (i.e., Aldenius & Khan, 2017). The Italian professor Appolloni (i.e., Appolloni et al., 2011; Liu et al., 2021) usually work with Chinese authors (i.e., Liu et al., 2021). Finally, the yellow group are the new joiners, that is, Darnall and Bretschneider (e.g., Hsueh et al., 2020; Hafsa et al., 2021), who work on GPP in the US; Lingegård with three published works (e.g., Lingegård et al., 2021), who reports on the Swedish context (e.g., Kadefors et al., 2021); and Ma, who offers a recent Chinese perspective (i.e., Ma et al., 2022).

Figure 3.7: Relationships between authors (2000-2023)



Source: Map generated by VOSviewer based on the sample

Appendix 3A contains an extraction from the database that links SD with Green Public Procurement within its abstract, indicating (1) authors, (2) journals, and (3) institutions. The purpose of this is to capture all documents that would help identify the relationship. Afterwards, a careful selection of those that clearly link GPP and SD was conducted by reading the documents and considering only those that are published with that relationship explicitly mentioned.

Green Public Procurement (GPP) has emerged globally as a vital mechanism for achieving sustainable development goals (SDGs) by integrating environmental and social criteria into procurement processes. Researchers such as Adjei-Bamfo, Maloreh-Nyamekye, and Ahenkan (University of Ghana) emphasized in *Resources Conservation and Recycling* (2019) how e-government can facilitate GPP in developing countries by streamlining procurement processes to enhance sustainability and transparency.

Biberos-Bendezú et al. (Pontificia Universidad Católica del Perú) in *Integrated Environmental Assessment and Management* (2022) demonstrated how incorporating environmental decision-making in Peru's public procurement supports national sustainability efforts. They emphasized the potential of GPPs to reduce environmental footprints in low-income countries.

Bratt et al. (Blekinge Institute of Technology) in *the Journal of Cleaner Production* (2013) proposed a framework for integrating sustainability into public procurement, reinforcing GPP's role in promoting long-term environmental and social benefits in developed economies. Similarly, Burchard-Dziubinska and Jakubiec (University of Lodz) in *Comparative Economic Research* (2012) examined the implementation of GPP in Polish local governments, highlighting its importance for sustainable regional development.

Further contributions include works by Chiarini, Opoku, and Vagnoni (University of Ferrara, University College London) in *Journal of Cleaner Production* (2017), which focus on sustainable procurement practices in public healthcare, and by Manta et al. (Romanian

Academy of Sciences) in *Amfiteatru Economic* (2022), which discuss GPP as a tool for achieving SD across public sectors.

#### 3.5.2 Systematic literature review

In addition to the results of the bibliometric analysis presented above, Appendix 3B 2 defines all the characteristics we captured from the database, and Appendix 3C contains information on the characteristics of GPP articles, showing: the method used for the research (i.e., qualitative, quantitative or mixed), source of information (i.e., primary, secondary or mixed), unit of analysis (i.e., local, national, supranational, etc.), theoretical framework used, sample size in the case of empirical works, and geographical scope. In summary, slightly more work was conducted using qualitative methods (93 studies, 46.2%) than quantitative approaches (84 studies, 41.8%). Only 25 studies (12.4%) used a mixed qualitative/quantitative approach. Most articles were based on primary data (96 out of 201, 47.7%), followed closely by secondary data (97 out of 201, 48.2%), and a mixed approach (9 out of 201, 4.5%). Regarding the unit of analysis, the majority focused on the analysis of national level (73 out of 201), such as ministries, governments, national agencies, etc. The second most represented category was the local level (50). Only 40 of the 201 documents were based on a theoretical background. The most frequently used theory (six in total) was Institutional Theory, such as in Ahsan and Rahman (2017), which examined the challenges of implementing green public procurement (GPP) in the Australian health sector. 39 out of 201 works included hypotheses, working mostly with an exploratory approach. 49 out of the 201 works had samples of more than 200 cases, suggesting that many studies used small sample sizes. The largest sample found to date was that of Badell and Rosell (2021), who explained GPP as a research tool to quantify commitment to environmental policies, with a sample of 743,061 EU-level tenders. Da Giacomo et al. (2019) also aimed to understand whether the introduction of GPP can stimulate the internalization of LCC in public tenders and studied 1900 public tenders in the EU. Finally, related to the geographical scope of the studies, research was widely distributed, as presented in Figure 3.7. European Union (EU) countries were the most studied, with 48% of the sample, followed by the UK, the US, China, Japan, and Brazil.

### 3.6. DISCUSSION, IMPLICATIONS AND CONCLUSIONS

#### 3.6.1 Facilitating and hindering GPP for Sustainable Development

RQ1b attempts to identify the main facilitating and hindering factors of GPP in achieving SD. Through a systematic review of the literature, we identified four categories of key drivers and barriers that have significantly influenced the implementation of GPP in general and its contribution to the achievement of SD: (1) political, (2) stakeholders-related, (3) organizational, and (4) individual factors. For each category are presented the drivers (facilitating factors) and barriers (hindering factors). Table 3.4 presents some drivers and barriers of GPP identified in previous literature. For an expanded version of the table, consult Appendix 3D.

The **first category** we found is represented by **political** factors affecting GPP. Important drivers include governmental commitment and expectations (Wontner et al., 2020) with a clear political vision and an adequate basis for decision-making (Lundmark et al., 2021; Palm & Backman, 2017), effective social and environmental laws and rewards and recognition associated with compliance (Adjei-Bamfo et al., 2020; Liu et al., 2021), as well as national objectives (Lindfors, & Ammenberg, 2021). Regarding local governments, support from executive leadership and political systems increases both green and social equity public procurement practices (Rodriguez-Plesa et al., 2022). Regarding political orientations, a more liberal community is more likely to engage in GPP practices (Rodriguez-Plesa et al., 2022). Anthonissen et al. (2016) highlighted the effectiveness of including environmental award criteria in public tenders to enhance the impact of GPP, provided they are relevant (Parikka-Alhola, 2008). The use of

citywide purchase contracts to reduce costs can also foster the adoption of GPP (Leal et al., 2020), standardization (Rainville, 2017), and centralization (Roman, 2017).

Leal et al. (2020) also found that rules and rule enforcement are more likely to lead companies to adopt green purchasing policies. Finally, Liu et al. (2021) showed that the administrative level of the public sector positively moderates the mediating effect produced by knowledge of GPP implementation policies and negatively moderates the mediating effect produced by knowledge of GPP benefits.

Effective implementation of the GPP is impeded by several political barriers. One key barrier is the absence of a legal framework on GPPs (Treviño-Lozano, 2021), which hinders the establishment of clear guidelines and regulations for integrating environmental and social considerations into procurement processes (Adjei-Bamfo & Maloreh-Nyamekye, 2021). There is a lack of clarity in relation to the enforcement of policies and laws, and political opposition and corruption can hinder GPP adoption (Treviño-Lozano, 2021). Other barriers include a lack of evaluation and recognition, excessive bureaucracy (Rosell, 2021), and decentralized purchasing structures (Leal et al., 2019), especially if decentralization is excessive (Placek et al., 2021). Conversely, Stritch et al. (2020) highlighted centralization as a possible barrier (see also: Hsueh et al., 2020).

Leal et al. (2020) found that the number of weeks for routine low-cost purchases was negatively related to the probability of municipalities adopting green purchasing practices. Lack of political will and budget constraints pose obstacles to the allocation of resources and support for GPP initiatives (Adjei-Bamfo & Maloreh-Nyamekye, 2021; Ahsan & Rahman, 2017). Financial constraints also hinder the adoption of GPP practises (Brammer & Walker, 2011), especially when the economy is prioritized over non-economic dimensions (Treviño-Lozano, 2021) or when sustainability is not considered a priority in the early design of public procurement.

The high costs associated with sustainable goods and services, coupled with limited availability, present challenges for institutions seeking to incorporate sustainability criteria into their GPP decisions (Dimand, 2022). Furthermore, cultural factors and perceptions of disconnection within the public sector regarding GPP can create additional hurdles (Delmonico et al., 2015). Addressing these cultural barriers is crucial for fostering shared understanding and commitment to GPP across organizational levels. It is important to note that private companies can also face financial constraints, and government support in policymaking and direct financial funding for social entrepreneurial activities (e.g. firms settled up by immigrants in Sweden) can favor such initiatives (Kordestani et al., 2017).

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Table 3.4: Summary of facilitators and barriers to GPP

| Factor       | Facilitators /Barriers | Component                                                                                                  | Reference                                                    | Factor         | Facilitators /Barriers | Component                                                                                  | Reference                                                                                        |
|--------------|------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------|------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Political    | Facilitators           | Government commitment and expectations                                                                     | Wontner et al. (2020)                                        | Organizational | Facilitators           | Environmental training and environmental management                                        | Aragão & Jabbour, (2017), Leger et al., (2013), Pacheco-Blanco & Bastante-Ceca (2016)            |
|              |                        | Clear political vision and an adequate basis for decision-making                                           | Lundmark et al. (2021)                                       |                |                        | Organizational leadership in environmental, human rights, philanthropic, and safety issues | Bansal & Roth (2000)                                                                             |
|              |                        | Clear policies                                                                                             | Palm & Backman (2017)                                        |                |                        | Management support                                                                         | Vluggen et al. (2020)                                                                            |
|              |                        | Presence of effective social and environmental laws and rewards and recognition associated with compliance | Adjei-Bamfo et al., 2020; Liu et al. (2021)                  |                |                        | Resources, awareness levels                                                                | McMurray et al. (2014)                                                                           |
|              |                        | National objectives                                                                                        | Lindfors & Ammenberg (2021)                                  |                |                        | EMAS/ISO 14001, information and training initiatives, awareness of technicalities          | Chiarini & Vagnoni (2016), Testa et al. (2012, 2016)                                             |
|              |                        | Support from executive leadership and political system, liberal orientation of community                   | Rodriguez-Plesa et al., (2022)                               |                |                        | Large size                                                                                 | Chiarini & Vagnoni (2016), Michelsen & de Boer (2009), Rosell, (2021), Testa et al. (2012, 2016) |
|              | Barriers               | Lack of a legal framework on sustainable procurement                                                       | Treviño-Lozano (2021)                                        |                | Barriers               | Implementation of support mechanisms                                                       | Erridge & Hennigan (2015)                                                                        |
|              |                        | Lack of clear guidelines and regulations for GPP integration in procurement process                        | Adjei-Bamfo & Maloreh-Nyamekye (2021)                        |                |                        | Compliance with EU procurement directives                                                  | Erridge & Hennigan (2015)                                                                        |
|              |                        | Political opposition and corruption                                                                        | Treviño-Lozano (2021)                                        |                |                        | Institutional conflicts                                                                    | Mercado et al. (2016)                                                                            |
|              |                        | Lack of evaluation and recognition, bureaucracy                                                            | Rosell (2021)                                                |                |                        | Priority conflicts                                                                         | Walker & Brammer (2009)                                                                          |
|              |                        | Decentralized purchasing structures, especially if decentralization is excessive                           | Leal et al., (2019); Placek et al. (2021).                   |                |                        | Resource limitations, performance measurement, and supply and demand issues                | Hasselbalch et al., (2014).                                                                      |
|              |                        | Cultural factors; perceptions of disconnection within the public sector                                    | Delmonico et al., (2015)                                     |                |                        | Inadequate knowledge of available options                                                  | Leal et al. (2019)                                                                               |
| Stakeholders | Facilitators           | Social acceptance of sustainability                                                                        | Keulemans & Van de Walle (2017)                              | Individual     | Facilitators           | Public officers' culture                                                                   | Preuss (2009)                                                                                    |
|              |                        | Comprehension of related benefits from GPP                                                                 | Lingegård et al. (2021)                                      |                |                        | Individual commitment                                                                      | Brammer & Walker (2011)                                                                          |
|              | Barriers               | Lack of knowledge and skills; lack of technical capacity.                                                  | Adjei-Bamfo & Maloreh-Nyamekye (2021), Treviño-Lozano (2021) |                |                        | Moral/ethical motivations, and educational background                                      | Leal et al. (2019) Nikolaou & Loizou (2015)                                                      |
|              |                        | Incomplete awareness or knowledge                                                                          | Testa et al. (2016)                                          |                | Barriers               | Risk aversion                                                                              | Prier et al. (2016)                                                                              |

The **third category** includes **organizational** factors related to public entities, town halls, and government. The alignment between GPP and environmental training has been observed, indicating a coevolutionary relationship among GPP, environmental training, and environmental management (Aragão & Jabbour, 2017; Leger et al., 2013; Pacheco-Blanco & Bastante-Caeca, 2016). Organizational leadership is a crucial facilitator for GPP engagement, particularly regarding environmental, human rights, philanthropic, and safety issues (Bansal & Roth, 2000), including management support (Vluggen et al., 2020). Settling up indicators (KPIs) can help to foster GPP by controlling different variables (Smith et al., 2016). Facilitating factors include resources, awareness levels (i.e., McMurray et al., 2014), EMAS/ISO 14001 certifications, information and training initiatives, and the level of awareness of technicalities across the organization (Chiarini & Vagnoni, 2016; Testa et al., 2012; 2016). Large corporations have been identified as influential drivers of GPP (Chiarini & Vagnoni, 2016; Michelsen & de Boer, 2009; Rosell, 2021; Testa et al., 2012, 2016). Innovation capability (Al Nuaimi & Khan, 2019) and institutional innovativeness (Roman, 2017) have also been identified as strong drivers of GPP towards SD. Rewards and incentives can also have a positive impact on the implementation of GPP (Zhu et al., 2013). Supportive mechanisms such as low emission specifications, contract splitting and the inclusion of social clauses can also facilitate the integration of sustainability criteria into procurement processes (Erridge & Hennigan, 2015).

Difficulties in complying with EU procurement directives and challenges in integrating social aspects and costs have been identified as internal organizational barriers to GPP implementation (Erridge & Hennigan, 2015), although the use of tools such as the carbon footprint can help (Tsai, 2017). Life cycle cost analysis in GPP can also be promoted through training programs and awareness campaigns (De Giacomo et al., 2019; Lindfors & Ammenberg, 2021). To overcome these barriers, the development of skills and confidence among procurement professionals is required through training (Aragão & Jabbour, 2017; Mendonça et al., 2021) that can enhance environmental skills (Michelsen & de Boer, 2009). Multidisciplinary teams tend to be the best option for solving this GPP barrier (Leger et al., 2013). It is essential to address the lack of knowledge and practice concerning costing life and social aspects, resource limitations, performance measurements, and supply and demand issues (Hasselbalch et al., 2014). Furthermore, a lack of policies and guidelines for sustainable procurement, limited resources, high costs of sustainable goods (Walker & Brammer, 2009), and inadequate knowledge of available options need to be addressed to enhance the implementation of GPP (Leal et al., 2019).

Finally, other **individual factors** also play a role, such as gender (i.e., women) and age (i.e., older citizens). For instance, according to Keulemans and Van de Walle (2017), being female or an older person strongly supports GPP. The culture of public officers has also been identified as crucial in fostering GPP (Preuss, 2009). Individual commitment also plays a vital role in the discretionary aspects of GPPs, such as philanthropy and procurement from small and local businesses (Brammer & Walker, 2011), and generally for moral and ethical motivations. Educational background can motivate GPP implementation (Leal et al., 2019; Nikolaou & Loizou, 2015). Leadership has also been identified as a key driver of GPP (Melon, 2020), while risk aversion can represent a barrier (Prier et al., 2016).

### 3.6.2 SD and GPP

Green Public Procurement advances sustainable development by encouraging public sector adoption of environmentally friendly practices. One benefit of GPP to SD is its promotion of firms' environmental practices. Ma et al. (2022) showed that GPP incentivizes companies to obtain environmental certifications, thus providing them with a competitive edge. Nash (2009)

added that GPP encourages sustainable production and consumption, thus helping to shift towards a circular economy.

GPPs also support broader social outcomes. McCrudden (2004) noted that GPPs can advance social objectives such as fair labor practices and community development. Manta et al. (2022) emphasized that aligning procurement with sustainability goals ensures that economic growth is paired with environmental and social responsibility.

Two key drivers for the implementation of GPP towards SD are stakeholder engagement and strong policy frameworks. Oliveira et al. (2021) emphasized that involving a diverse range of stakeholders, including suppliers and government agencies, helps tailor GPPs to specific sustainability goals, promoting innovation and shared responsibility. Similarly, Olsson et al. (2022) highlighted the role of EU-level policy frameworks, which set clear standards and best practices, encouraging sectors like construction to align with SD objectives.

However, psychological resistance and lack of knowledge act as barriers to GPP implementation. Preuss and Walker (2015) identified resistance to change and the perception of complexity in sustainable procurement as psychological hurdles that can impede adoption in the public sector. Additionally, Patarlageanu et al. (2020) noted that insufficient public officials' knowledge about GPP can hinder effective implementation, suggesting the need for targeted training to overcome these challenges.

#### **3.6.3 Future research directions and emerging trends in GPP with its effects on SD**

The examination of GPP reveals several critical directions for future research that can significantly contribute to SD. This section delineates five primary areas of focus for further research to reply to RQ2 concerning future direction on GPP towards SD: methods advancements, the geographical and contextual analysis of sensitivity, how to overcome internal barriers, technological integration and digitalization, and finally, policy interventions and social outcomes.

First, regarding methodological advancements, the current landscape of GPP research is characterized by a diverse array of methodologies, ranging from qualitative to quantitative approaches. However, there is an urgent need for more robust hypothesis testing, particularly through larger sample sizes and richer qualitative explorations. Future studies could benefit from integrating mixed-methods approaches, as suggested by Testa et al. (2016), to enhance the depth and breadth of sustainable procurement research. This methodological synergy can facilitate a more comprehensive understanding of the complexities of GPP and its implications for SD.

Second, related to geographical scope and contextual sensitivity, a significant gap exists in the understanding of localized factors influencing GPP, particularly in developing countries and specific outsider contexts, such as South Africa. As many regions remain underexplored, this indicates a rich potential for future research that should pivot towards context-sensitive sustainable procurement approaches that account for cultural, economic, and institutional variations. This shift could inspire new hypotheses regarding the adaptation of GPP strategies in rapidly evolving global contexts (Bargues et al., 2019).

Third, the literature highlights various internal barriers that impede the implementation of GPP, including compliance with procurement directives, institutional conflicts, resource limitations, and a lack of awareness regarding sustainable options (Grandia & Voncken, 2019). Future studies should investigate strategies to overcome these barriers, focusing on organizational change management and capacity building. Understanding how organizations can effectively

navigate these challenges is crucial for advancing GPP practices and achieving sustainable development goals (Melissen & Reinders, 2012).

Fourth, concerning the technological integration of the GPP, the transformative potential of digitalization and e-government in promoting the GPP is increasingly recognized. Future research should examine how digital platforms can facilitate the integration of environmental considerations, enhance vendor assessments, and foster transparency in procurement processes (Lundberg et al., 2015). There is a notable scarcity of comprehensive studies addressing the role of technology in sustainable procurement. Investigating the long-term effects of digitization, scalability, and the potential contributions of AI could yield valuable insights into the future of GPP and its alignment with sustainable development objectives (Amann et al., 2014).

Finally, the interplay among GPP, social policies, and SD is a critical area for future inquiry. Prior studies have established a significant link between sustainable procurement and healthcare outcomes, particularly in enhancing equity within minority communities (Oruezabala & Rico, 2012). Future research should explore how policy interventions can optimize GPP benefits, address disparities and foster inclusive procurement practices. This line of inquiry could lead to a broader transformation in procurement policies, ultimately advancing healthcare equity and other societal goals (Bjerkan et al., 2019).

### 3.6.4 Conclusions and limitations

The GPP analysis illuminated several key issues that underscore the importance of this field in the context of SD. Key findings underscore the importance of political, stakeholder, and organizational factors in both facilitating and impeding GPP implementation. Political commitment, clear policy frameworks, and regulatory pressures are crucial drivers of GPP, emphasizing the need for strong government support to promote sustainable procurement practices (Wontner et al., 2020; Lundmark et al., 2021). In contrast, barriers such as the absence of a legal framework, political opposition, and budget constraints signal the necessity for enhanced institutional support and resource allocation (Adjei-Bamfo & Maloreh-Nyamekye, 2021; Treviño-Lozano, 2021). Additionally, stakeholder engagement and organizational capacity are vital, with gaps in knowledge and resistance to change identified as significant obstacles to effective GPPs (Oliveira et al., 2021; Preuss & Walker, 2015).

Our findings also reveal the need to address both internal and external challenges to strengthen GPP's role in promoting SD. Future research should focus on strategies to overcome these barriers, including improving knowledge dissemination, fostering stakeholder collaboration, and leveraging technological advancements (Erridge & Hennigan, 2015; Grandia & Voncken, 2019). By addressing these issues, GPPs can be more effectively integrated into public procurement processes and contribute to achieving environmentally, social, and economic sustainability goals.

Nevertheless, there are some limitations in our study that should be acknowledged. First, the inclusion of works written in only English may have excluded relevant national laws and policy documents that are often written in other languages. Second, the study primarily relied on the "*Web of Science: Core Collection*" database, with additional works from "*Scopus*" included for robustness. However, the inclusion of other databases could have further enriched the study. Lastly, given the growing nature of the field and its increasing impact, it would be valuable to repeat this study to capture the evolving state of the art in GPP research.

The implications of these findings are significant for policymakers and practitioners involved in sustainable procurement. Addressing internal barriers and integrating digital technologies can enhance GPP implementation, leading to improved transparency and better social and

environmental outcomes (Baum et al., 2021; Appolloni et al., 2011). However, limitations such as language constraints and database reliance should be acknowledged. Future studies should expand their scope and methodologies to capture the evolving landscape of GPP research. Overall, GPP represents a crucial nexus between public procurement and sustainability, and continued interdisciplinary research and innovation are key to achieving global sustainability objectives (Shakya & Lama, 2019).

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#### **APPENDIX**

Table 3.A: SD in GPP

| Authors                                                                       | Article Title                                                                                                                                                                     | Source Title                                                       | Affiliations                                                                                                                                                                                            | Publication Year |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Adjei-Bamfo, P; Maloreh-Nyamekye, T; Ahenkan, A                               | The role of e-government in sustainable public procurement in developing countries: A systematic literature review                                                                | RESOURCES CONSERVATION AND RECYCLING                               | University of Ghana                                                                                                                                                                                     | 2019             |
| Biberos-Bendezú, K; Cardenas, U; Kahhat, R; Vázquez-Rowe, I                   | Introducing environmental decision-making criteria to foster Green Public Procurement in Peru                                                                                     | INTEGRATED ENVIRONMENTAL ASSESSMENT AND MANAGEMENT                 | Pontificia Universidad Catolica del Peru                                                                                                                                                                | 2022             |
| Bratt, C; Hallstedt, S; Robèrt, KH; Broman, G; Oldmark, J                     | Assessment of criteria development for public procurement from a strategic sustainability perspective                                                                             | JOURNAL OF CLEANER PRODUCTION                                      | Blekinge Institute Technology                                                                                                                                                                           | 2013             |
| Burchard-Dziubinska, M; Jakubiec, T                                           | Green Public Procurements (GPP) as an Instrument of Implementation of Sustainable Development. Analysis of the Experience of the Lodz Region Local Government                     | COMPARATIVE ECONOMIC RESEARCH-CENTRAL AND EASTERN EUROPE           | University of Lodz                                                                                                                                                                                      | 2012             |
| Diófasi-Kovács, O; Valkó, L                                                   | Furthering sustainable development: The implementation of Green Procurement in Central and Eastern Europe Methods and Experiences from Hungarian Public and Private Organizations | PROBLEMY EKOROZWOJU                                                | Budapest University of Technology & Economics                                                                                                                                                           | 2015             |
| Islam, MM; Murad, MW; McMurray, AJ; Abalala, TS                               | Aspects of sustainable procurement practices by public and private organisations in Saudi Arabia: an empirical study                                                              | INTERNATIONAL JOURNAL OF SUSTAINABLE DEVELOPMENT AND WORLD ECOLOGY | King Abdulaziz University; University of South Australia; Royal Melbourne Institute of Technology (RMIT); King Abdulaziz University                                                                     | 2017             |
| Leal, W; Skouloudis, A; Brandli, LL; Salvia, AL; Avila, LV; Rayman-Bacchus, L | Sustainability and procurement practices in higher education institutions: Barriers and drivers                                                                                   | JOURNAL OF CLEANER PRODUCTION                                      | Hochschule Angewandte Wissenschaft Hamburg; Manchester Metropolitan University; University of Aegean; Universidade de Passo Fundo; Universidade Federal de Santa Maria (UFSM); University of Winchester | 2019             |
| Manta, O; Panait, M; Hysa, E; Rusu, E; Cojocaru, M                            | PUBLIC PROCUREMENT, A TOOL FOR ACHIEVING THE GOALS OF SUSTAINABLE DEVELOPMENT                                                                                                     | AMFITEATRU ECONOMIC                                                | Romanian Academy of Sciences; Oil & Gas University of Ploiesti; Moldova State University                                                                                                                | 2022             |
| Preuss, L                                                                     | Addressing sustainable development through public procurement: the case of local government                                                                                       | SUPPLY CHAIN MANAGEMENT-AN INTERNATIONAL JOURNAL                   | University of London; Royal Holloway University London                                                                                                                                                  | 2009             |
| Preuss, L; Walker, H                                                          | PSYCHOLOGICAL BARRIERS IN THE ROAD TO SUSTAINABLE DEVELOPMENT: EVIDENCE FROM PUBLIC SECTOR PROCUREMENT                                                                            | PUBLIC ADMINISTRATION                                              | University of London; Royal Holloway University London; Cardiff University                                                                                                                              | 2011             |
| Rejeb, A; Rejeb, K; Kayikci, Y; Appolloni, A; Treiblmaier, H                  | Mapping the knowledge domain of green procurement: a review and bibliometric analysis                                                                                             | ENVIRONMENT DEVELOPMENT AND SUSTAINABILITY                         | University of Rome Tor Vergata; Universite de Carthage; Sheffield Hallam University; University of Sussex                                                                                               | 2023             |
| Treviño-Lozano, L                                                             | Sustainable Public Procurement and Human Rights: Barriers to Deliver on Socially Sustainable Road Infrastructure Projects in Mexico                                               | SUSTAINABILITY                                                     | University of Greenwich; Universidad Panamericana - Ciudad de Mexico                                                                                                                                    | 2021             |
| Wang, CH; Qiao, YH; Li, XM                                                    | A systems approach for green public procurement implementation                                                                                                                    | JOURNAL OF PUBLIC PROCUREMENT                                      | Renmin University of China; Missouri State University; Tennessee State University                                                                                                                       | 2020             |
| Zhang, MS; Zhang, L; van Dijk, MP                                             | Managing Sustainable Public Procurement: A Nationwide Survey in China                                                                                                             | SUSTAINABILITY                                                     | Maastricht University                                                                                                                                                                                   | 2022             |

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Table 3.B: Information collected from each article

| The type of information                             | Definition                                                                                                                                                                                                                                                    | Items/Categories                                                                                                                                        |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Qualitative/Quantitative                            | A qualitative article follows “ <i>an iterative process in which improved understanding to the scientific community is achieved by making new significant distinctions resulting from getting closer to the phenomenon studied</i> ” (Aspers & Corte, 2019:8) | Qualitative                                                                                                                                             |
|                                                     | A quantitative article conducts quantitative research which “ <i>is the process of collecting, analysing, interpreting, and writing the results of a study</i> ” (Creswell, 2002:3)                                                                           | Quantative                                                                                                                                              |
|                                                     | Mixed                                                                                                                                                                                                                                                         | Mixed                                                                                                                                                   |
| Methods                                             | Methods is defined as follows: “ <i>Quantitative and qualitative research methods investigate and explore the different claims to knowledge and both methods are designed to address a specific type of research question</i> ” (Williams, 2007:6).           | Questionnaire, interview, focus group discussion, content analysis, literature review, and observations                                                 |
| Unit of Analysis                                    | A unit of analysis is any item from which data can be collected and measured.                                                                                                                                                                                 | Government, regional authorities, local municipalities, state-owned companies, public institutions (i.e., hospitals, universities), and other entities. |
| Source of information                               | Defined as how the researcher gathered the data analyzed in the article. Primary data (collected from the researcher) and secondary data (already collected by a third- party) were included as sources of information.                                       | Primary, secondary, and both                                                                                                                            |
| Theoretical Framework                               | Defined as follows: “ <i>Theoretical framework is the structure that can hold or support a theory of a study</i> ” (Swanson & Chermack, 2013:122)                                                                                                             | Description                                                                                                                                             |
| Sample size                                         | The number of individuals included in a research study to represent the population is defined.                                                                                                                                                                | Numerical                                                                                                                                               |
| Population                                          | A population is the entire group on which conclusions are based.                                                                                                                                                                                              | Numerical                                                                                                                                               |
| Geographical Scope (country analysis)               | Countries or regional scope analyzed in the research.                                                                                                                                                                                                         | Name of country or region (i.e., study on Europe)                                                                                                       |
| Identification of Drivers (Factors)                 | Defined as “ <i>something that makes other things progress, develop, or grow stronger</i> ” (Combley, 2011:259).                                                                                                                                              | Description                                                                                                                                             |
| Identification of Barriers (Factors)                | Defined as “ <i>something that prevents something else from happening or makes it more difficult</i> ” (Combley, 2011:63).                                                                                                                                    | Description                                                                                                                                             |
| Future Research (proposed by the different authors) | Recommendations or areas of investigation suggested by various authors for further study and exploration in a particular field or topic, aimed at expanding knowledge, addressing gaps, and advancing the understanding and practices in that area.           | Description                                                                                                                                             |

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Table 3.C: Overview of previous GPP research and key messages

| Item Studied           | Category Overview                                                                                                                      | Key Messages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methods                | <ul style="list-style-type: none"> <li>Qualitative (45.8%)</li> </ul>                                                                  | <ul style="list-style-type: none"> <li><u>Case study</u>: 20% out of the overall number of studies used a single case study, mainly through interviews (Kristensen et al., 2021; Mendonça et al., 2021; Palm &amp; Backman, 2017; Sparrevik et al., 2018); but less commonly through content analysis of documents (Aldenius, 2018; Alhola et al., 2019). Only one case study was combined with a survey (Braun et al., 2018).</li> </ul>                                                                                                                                                                                                                     |
|                        |                                                                                                                                        | <ul style="list-style-type: none"> <li><u>Multiple case studies</u>: A few studies adopted multiple case studies (i.e.: Mercado et al., 2016; Vluggen et al., 2019; 2020).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        |                                                                                                                                        | <ul style="list-style-type: none"> <li><u>Narrative approach</u>: Other authors, e.g. McCrudden (2004) and Rainville (2017), adopted a narrative approach, aimed at mapping exercises. Melissen and Reinders (2012) and Melon (2020) also used a narrative approach, but for critical assessment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |
|                        |                                                                                                                                        | <ul style="list-style-type: none"> <li><u>Delphi</u>: Finally, Wang et al. (2020) used the Delphi methodology, and Tukker et al. (2008) summarised a policy brief.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                        | <ul style="list-style-type: none"> <li>Quantitative (41.6%)</li> </ul>                                                                 | <ul style="list-style-type: none"> <li><u>Survey</u>: most adopted quantitative methodology (20.7% out of the overall studies).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                        |                                                                                                                                        | <ul style="list-style-type: none"> <li><u>Analysis of observations</u>: 14% out of the overall studies.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                        |                                                                                                                                        | <ul style="list-style-type: none"> <li><u>Case study approach with the use of secondary data</u>: (Alvarez &amp; Rubio, 2015; Anthonissen, 2016; Badell &amp; Rosell, 2021; Biberos-Bendezu et al., 2021)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                        |                                                                                                                                        | <ul style="list-style-type: none"> <li><u>Descriptive analysis</u>: van Berkel &amp; Schotanus, 2021.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | <ul style="list-style-type: none"> <li>Mixed qualitative/quantitative (7,2%).</li> </ul>                                               | <ul style="list-style-type: none"> <li><u>Quali-quantitative mixed approach used case studies, interviews, surveys, focus groups, and primary and secondary data</u>: Aragão &amp; Jabbour (2017) used quantitative data and also conducted telephone interviews to supplement their data; Aldenius et al. (2022) supplemented interviews with content analysis; Kleine and Brightwell (2015) adopted both a survey and focus group; Testa et al. (2016) adopted content analysis.</li> </ul>                                                                                                                                                                 |
|                        | <ul style="list-style-type: none"> <li>Literature review and bibliometric analysis (5.4%)</li> </ul>                                   | <ul style="list-style-type: none"> <li><u>SLR</u>: Molin et al. (2018); Adjei-Bamfo et al (2019); Guarnieri &amp; Gomes (2019); Chersan et al. (2020); Cheng et al., (2018)</li> <li><u>Literature review (not SLR)</u>: Andrykiewicz (2012), de Leonardis (2011); Hafsa et al. (2021).</li> <li><u>Bibliometric analysis</u>: Pătărlăgeanu et al. (2020); Torres-Prunonosa et al. (2021); Wang et al. (2018).</li> </ul>                                                                                                                                                                                                                                     |
|                        |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Source of information  | <ul style="list-style-type: none"> <li>Primary data (47.7%)</li> <li>Secondary data (48.2%)</li> <li>Mixed approach (4.5%).</li> </ul> | <ul style="list-style-type: none"> <li><u>Unit of analysis</u>: the majority focused on the analysis at the national level (73 out of 201), including ministries, governments, and national agencies. The second most represented category was the local level (50), while few studies focused on the educational level (11), regional level (12), and supranational level (8) (i.e., EU, UN, global, etc...) Residual categories: hospitals (Oruezabala &amp; Rico, 2012); firms (Nikolaou &amp; Loizou, 2015; Ryu &amp; Sueyoshi, 2021); state-owned companies (Adjei-Bamfo &amp; Maloreh-Nyamekye, 2019; Al Nuaimi, 2020; Aritua et al., 2009).</li> </ul> |
| Theoretical framework, | <ul style="list-style-type: none"> <li>19% based on a theoretical framework</li> <li>exploratory studies</li> </ul>                    | <ul style="list-style-type: none"> <li>Only 40 of the 201 documents were based on a theoretical background, with n.6 on institutional theory (i.e., Ahsan &amp; Rahman, 2017; El Haddadi et al., 2021).</li> <li>Only 39 of 201 documents tested their proposed hypotheses, working mostly with an exploratory approach.</li> </ul>                                                                                                                                                                                                                                                                                                                           |

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|                        |                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| hypotheses, and sample | <ul style="list-style-type: none"> <li>• small number of survey participants</li> </ul>                                             | <ul style="list-style-type: none"> <li>• Only 49 of the 201 documents had samples of more than 200 cases, suggesting that many studies used small sample sizes. (i.e., Badell and Rosell, 2021; De Giacomo et al., 2019).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Geographical focus     | <ul style="list-style-type: none"> <li>• 48% EU</li> <li>• Other countries studied UK, the US, China, Japan, and Brazil.</li> </ul> | <ul style="list-style-type: none"> <li>• <u>EU</u>: Sweden (23 articles, 12%) was the first country studied in the EU but also worldwide, together with the UK. This is due to some early movers (Nissinen et al., 2009; Parikka- Alhola, 2008) that have been frequently cited, but also to the consolidated interest by other authors during the last decade (e.g. Bratt et al., 2013; Lundberg et al, 2015; Uttam &amp; Roos, 2015; Bryngemark et al. (2023). Italy (16 articles, 8.7%), is the second EU country (and the fourth worldwide). The early movers in Italy began some years later than in the UK and Sweden, but before the U.S. (Appolloni et al., 2011, Tarantini et al., 2011; Testa et al., 2012). Compared with other countries, Italy has been the focus of several studies on its own and not in comparison with other countries. Regarding the Netherlands (12 articles, 6.5%), apart from an early mover (Melissen &amp; Reinders, 2012), all articles were published between 2015 and 2022 (e.g. Grandia, 2016; Grandia &amp; Voncken, 2019; Eikelboom et al., 2018; Vluggen et al., 2020). Spain (11 articles, 6.0%) has been recently targeted by some scholars, with a focus on university procurement (e.g. Fuentes-Bargues et al., 2018; Pacheco-Blanco &amp; Bastante-Caeca, 2016). Finally, other countries have also been studied, such as Finland (2.7%), France (2.2%), Germany (2.2%), Romania (1.6%), Belgium (1.6%), and Latvia and Hungary. Poland is closing the gap, with an n.1 study in 2023.</li> <li>• <u>UK</u> (10%): has been targeted since the beginning, with the first mover studies by Walker and Brammer (2009, 2012 – see also Brammer &amp; Walker, 2011), Preuss (2009), and Preuss and Walker (2011). The interest in sustainable procurement continued to grow in the following years (i.e., Alhola et al., 2019; Baranovsky et al., 2020).</li> <li>• <u>USA</u> (9%): several scholars concentrated on national (Lingegård et al., 2021) and local government levels (Stritch et al., 2020). Most studies have been conducted in the last five years (2018-2022 (e.g. Blount et al., 2018; Chen, 2021; Dimand, 2022; Orsatti et al., 2020)</li> <li>• <u>China</u> (5%): was ranked fourth, and, apart from some early scholars (Ho et al., 2010; Zhu et al. 2013) most of the studies were concentrated in a period of three years (2019-2021).</li> <li>• <u>Brazil</u>: where most articles (7 out of 9) were published from 2017 to 2021</li> <li>• <u>African continent</u>: is also the focus of increasing interest, especially in South Africa (i.e., Agyepong &amp; Nhamo, 2017; Harland et al., 2019) and Ghana (i.e., Adjei-Bamfo &amp; Maloreh-Nyamekye, 2019; Asiedu et al., 2021; Etse et al., 2021). A special mention to a high-impact study focused on South Africa (McCrudden, 2004).</li> </ul> |

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Table 3.D: Summary of facilitators and barriers to GPP

| Factor    | Facilitators/Barriers | Component                                                                                                  | Reference                                               | Factor         | Facilitators/Barriers | Component                                                                                  | Reference                                                                                                       |
|-----------|-----------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------|-----------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Political | Facilitators          | Government commitment and expectations                                                                     | <i>Wontner et al. (2020)</i>                            | Organizational | Facilitators          | Environmental training and environmental management                                        | <i>Aragão &amp; Jabbour, (2017), Leger et al., (2013), Pacheco-Blanco &amp; Bastante-Ceca (2016)</i>            |
|           |                       | Clear political vision and an adequate basis for decision-making                                           | <i>Lundmark et al. (2021)</i>                           |                |                       | Organizational leadership in environmental, human rights, philanthropic, and safety issues | <i>Bansal &amp; Roth (2000)</i>                                                                                 |
|           |                       | Clear policies                                                                                             | <i>Palm &amp; Backman (2017)</i>                        |                |                       | Management support                                                                         | <i>Vluggen et al. (2020)</i>                                                                                    |
|           |                       | Presence of effective social and environmental laws and rewards and recognition associated with compliance | <i>Adjei-Bamfo et al., 2020; Liu et al. (2021)</i>      |                |                       | Resources, awareness levels                                                                | <i>McMurray et al. (2014)</i>                                                                                   |
|           |                       | National objectives                                                                                        | <i>Lindfors &amp; Ammenberg (2021)</i>                  |                |                       | EMAS/ISO 14001, information and training initiatives, awareness of technicalities          | <i>Chiarini &amp; Vagnoni (2016), Testa et al. (2012, 2016)</i>                                                 |
|           |                       | Support from executive leadership and political system, liberal orientation of community                   | <i>Rodriguez-Plesa et al., (2022)</i>                   |                |                       | Large size                                                                                 | <i>Chiarini &amp; Vagnoni (2016), Michelsen &amp; de Boer (2009), Rosell, (2021), Testa et al. (2012, 2016)</i> |
|           |                       | Including environmental award criteria in public tenders                                                   | <i>Anthonissen et al. (2016); Parikka-Alhola (2008)</i> |                |                       | Institutional innovativeness                                                               | <i>Roman (2017)</i>                                                                                             |
|           |                       | Use of citywide purchase contracts                                                                         | <i>Leal et al. (2020)</i>                               |                |                       | Rewards and incentives                                                                     | <i>Zhu et al. (2013)</i>                                                                                        |
|           |                       | Standardization                                                                                            | <i>Rainville (2017)</i>                                 |                |                       | Carbon footprint                                                                           | <i>Tsai (2017)</i>                                                                                              |
|           |                       | Centralization                                                                                             | <i>Roman (2017)</i>                                     |                |                       | Multidisciplinary teams                                                                    | <i>Leger et al. (2013)</i>                                                                                      |
|           |                       |                                                                                                            |                                                         |                |                       | Implementation of support mechanisms                                                       | <i>Erridge &amp; Hennigan (2015)</i>                                                                            |

### 3. GREEN PUBLIC PROCUREMENT AND SUSTAINABLE DEVELOPMENT

|                     |                     |                                                                                     |                                                                         |                       |                     |                                                                             |                                                        |
|---------------------|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------|---------------------|-----------------------------------------------------------------------------|--------------------------------------------------------|
| <i>Political</i>    | <i>Barriers</i>     | Lack of a legal framework on sustainable procurement                                | <i>Treviño-Lozano (2021)</i>                                            | <i>Organizational</i> | <i>Barriers</i>     | Compliance with EU procurement directives                                   | <i>Erridge &amp; Hennigan (2015)</i>                   |
|                     |                     | Lack of clear guidelines and regulations for GPP integration in procurement process | <i>Adjei-Bamfo &amp; Maloreh-Nyamekye (2021)</i>                        |                       |                     | Institutional conflicts                                                     | <i>Mercado et al. (2016)</i>                           |
|                     |                     | Political opposition and corruption                                                 | <i>Treviño-Lozano (2021)</i>                                            |                       |                     | Priority conflicts                                                          | <i>Walker &amp; Brammer (2009)</i>                     |
|                     |                     | Lack of evaluation and recognition, bureaucracy                                     | <i>Rosell (2021)</i>                                                    |                       |                     | Resource limitations, performance measurement, and supply and demand issues | <i>Hasselbalch et al., (2014).</i>                     |
|                     |                     | Decentralized purchasing structures, especially if decentralization is excessive    | <i>Leal et al., (2019); Placek et al. (2021).</i>                       |                       |                     | Lack of policy and guidelines                                               | <i>Walker &amp; Brammer (2009)</i>                     |
|                     |                     | Centralization                                                                      | <i>Stritch et al. (2020); Hsueh et al. (2020)</i>                       |                       |                     | High costs of sustainable goods                                             | <i>Walker &amp; Brammer (2009)</i>                     |
|                     |                     | Financial constraints                                                               | <i>Brammer &amp; Walker (2011); Treviño-Lozano (2021)</i>               |                       |                     | Inadequate knowledge of available options                                   | <i>Leal et al. (2019)</i>                              |
|                     |                     | Cultural factors; perceptions of disconnection within the public sector             | <i>Delmonico et al., (2015)</i>                                         |                       |                     |                                                                             |                                                        |
| <i>Stakeholders</i> | <i>Facilitators</i> | Support                                                                             | <i>Oruezabala &amp; Rico (2012)</i>                                     | <i>Individual</i>     | <i>Facilitators</i> | Gender (women) or age (older person)                                        | <i>Keulemans &amp; Van de Walle (2017)</i>             |
|                     |                     | Social acceptance of sustainability                                                 | <i>Keulemans &amp; Van de Walle (2017)</i>                              |                       |                     | Public officers' culture                                                    | <i>Preuss (2009)</i>                                   |
|                     |                     | Comprehension of related benefits from GPP                                          | <i>Lingegård et al. (2021)</i>                                          |                       |                     | Individual commitment                                                       | <i>Brammer &amp; Walker (2011)</i>                     |
|                     | <i>Barriers</i>     | Lack of knowledge and skills; lack of technical capacity.                           | <i>Adjei-Bamfo &amp; Maloreh-Nyamekye (2021), Treviño-Lozano (2021)</i> |                       |                     | Moral/ethical motivations, and educational background                       | <i>Leal et al. (2019) Nikolaou &amp; Loizou (2015)</i> |
|                     |                     | Incomplete awareness or knowledge                                                   | <i>Testa et al. (2016)</i>                                              |                       | <i>Barriers</i>     | Risk aversion                                                               | <i>Prier et al. (2016)</i>                             |

**4.**

DECODING THE GREEN DNA: ORGANIZATIONAL DRIVERS OF GPP  
ADOPTION IN ANDALUSIAN SMES

#### 4. ORGANIZATIONAL DRIVERS OF GPP ADOPTION

## 4 DECODING THE GREEN DNA: ORGANIZATIONAL DRIVERS OF GPP ADOPTION IN ANDALUSIAN SMES

### 4.1. ABSTRACT

This study investigates the organizational characteristics driving SMEs' motivation to adhere to Green Public Procurement (GPP) practices. Using the Resource-Based View as a theoretical lens, this study examines how environmental organizational culture, green training programs, and managerial vision for sustainability influence GPP motivation in SMEs. We relied on a sample of 206 small and medium enterprises (SMEs) from Andalusia, southern Spain, and conducted a moderated mediation regression analysis using macro-PROCESS. Green training programs acts as a mediator, meanwhile managerial vision for sustainability acts as a moderator in the relationship between environmental organizational culture and GPP adherence. By examining the influence of these organizational factors on motivation towards GPP, our findings reveal that a strong environmental organizational culture and green training programs might encourage GPP adherence. These results provide valuable insights into how SMEs can leverage internal resources to enhance their GPP motivation, support reduced environmental impacts and embed sustainable practices in corporate strategies. This research contributes to a deeper understanding of the organizational drivers that motivate SMEs to adhere to GPP programs, thus advancing sustainable development in SMEs.

### 4.2. INTRODUCTION

In an era where sustainability has become a defining issue, Green Public Procurement (GPP) has emerged as a crucial strategy for promoting environmentally responsible business practices. GPP is defined as the process whereby *“public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured”* (European Commission, 2011, p.4). GPP integrates environmental and social criteria into public procurement decisions and encourages companies that are interested in being a supplier of public entities to align their operations with global sustainable development goals (Testa et al., 2016a; Ortega-Carrasco et al., 2024). In the case of SMEs, adopting GPP not only responds to external pressures from public sector demand but also reflects a growing recognition that sustainable practices can drive long-term business success and competitiveness (Zhu et al., 2013; European Commission, 2016).

Despite the recognized benefits of the adherence of GPP for companies (Testa et al., 2016b) such as, the stimulus to product and process innovations in SMEs (Rizzi et al., 2014), the factors that motivate SMEs to engage in GPP remain underexplored. Further, SMEs tend to participate less in GPP compared to larger enterprises (Ahmad & Buniamin, 2020). For instance, according to the Transparency Portal of the Spanish Government (2024), only 15.53% of the companies awarded in public contracts are SMEs. These facts, in combination, show that a gap exists in the analysis of the motivation of SMEs to adhere to the GPP: *“what motivates SMEs to participate in public procurement and, more specifically, in GPP?”*

SMEs often face significant challenges, such as limited resources (Masron et al., 2024), which can make it difficult to prioritize environmental goals (Walker et al., 2008) and impede going beyond minimum regulatory compliance for implementing proactive environmental strategies (Aragón-Correa et al., 2008). However, certain organizational characteristics may play a pivotal role in driving GPP adherence. These internal drivers can be as critical as external pressures, such as regulatory demands or market expectations (Sarkis et al., 2010; Testa et al., 2016b). However, these internal characteristics are less analyzed in prior literature than external pressures (Diabat et al., 2013). Drawing upon the natural resource-based view, the relevance of

studying these organizational characteristics lies in the potential of GPP to serve as a lever for broader sustainability transitions in SMEs. The natural RBV (Hart, 1995) posits that the development of environmentally sustainable practices is grounded in the unique resources and capabilities of a firm, emphasizing the importance of internal analysis and resource prioritization to achieve competitive advantage while adhering to sustainable principles. Furthermore, a wide spectrum of advanced environmental management practices promotes companies to adhere to GPP (Ortega-Carrasco et al., 2024).

This study selected three practices related to human resource management: environmental organizational culture (EOC), green training programs (GTP) and managerial vision for sustainability (MVS). An environmental organizational culture can foster a corporate environment that prioritizes sustainability at all levels of operation (Wijethilake et al., 2023), while green training programs ensure that employees have the knowledge and skills needed to implement environmentally friendly practices (Delmonico et al., 2018). Top management's vision for sustainability is also essential because leadership commitment often sets the tone for the entire organization's approach to environmental practices (Giunipero et al., 2012; Walker et al., 2008).

GPP adherence by SME may influence innovation and positive organizational change for SMEs (Afum et al., 2024; Rizzi et al., 2014). As SMEs integrate GPP as a strategic area into their business decision making, they may discover new opportunities for innovation, such as the development of green products and services that meet the demands of environmentally conscious consumers (European Commission, 2016; McMurray et al., 2014; Rizzi et al., 2024). This ripple effect not only enhances the firm's competitive advantage but also contributes to broader societal goals, such as reducing carbon emissions and promoting a circular economy (Ahsan & Rahman, 2017; Gelderman et al., 2017). Due to the essential role of GPP in achieving sustainable development in SMEs, this study attempts to demonstrate how these organizational characteristics could motivate SMEs to adhere to GPP. Specifically, by analyzing the roles of EOC, GTP, and MVS, this research seeks to provide valuable insights into how SMEs can leverage internal resources to overcome barriers and maximize the benefits of GPP. Understanding the influence of these factors is essential for developing effective strategies to encourage broader GPP adoption, ultimately contributing to more sustainable business practices and environmental outcomes (Zhu et al., 2013; Testa et al., 2016b).

In this study, we propose that Green Training Programs (GTP) act as a mediating variable and Managerial Vision for Sustainability (MVS) as a moderating variable in the relationship between Environmental Organizational Culture (EOC) and motivation to adhere to Green Public Procurement (GPP) practices. The inclusion of GTP as mediator is justified by their critical role in equipping employees with the skills and knowledge needed to operationalize environmental values, thus strengthening the organization's capacity to adhere to GPP requirements (Renwick et al., 2016; Testa et al., 2016a). Similarly, the moderating role of MVS is grounded in its ability to amplify or attenuate the impact of cultural values on strategic sustainability decisions. When leadership strongly prioritizes sustainability, it ensures that environmental values are effectively translated into concrete practices, enhancing adherence to GPP (Aragón-Correa & Sharma, 2003; Sarkis et al., 2010). This integrative approach highlights how the interaction between these organizational drivers—culture, training, and leadership—can overcome barriers and increase adherence to GPP, offering a comprehensive perspective on the internal mechanisms that drive sustainability in SMEs.

### 4.3. THEORETICAL FRAMEWORK

#### 4.3.1 The Resource-Based View of the firm

The Resource-Based View (RBV) of a firm has become a key strategic management theory over the past few decades (Newbert, 2007). It emphasizes the critical role of a firm's internal resources and capabilities in achieving a competitive edge (Wernerfelt, 1984). According to RBV, internal resources and capabilities are the primary determinants of a sustainable competitive advantage (Dierickx & Cool, 1989). RBV has been widely embraced by both scholars and practitioners, providing the basis for numerous empirical studies and strategic frameworks (Penrose, 2009). At its core, RBV asserts that firms possessing resources that are valuable, rare, inimitable, and non-substitutable (VRIN) are more likely to outperform their competitors (Barney, 1991). These resources can be either tangible, such as patents and brand names, or intangible, such as human capital and organizational culture. The VRIN framework provides valuable insights into how firms can secure and sustain competitive advantage in the marketplace.

The RBV has undergone several extensions and refinements over time. Some scholars have argued that the VRIN framework may be too narrow and have suggested that additional factors, including luck and environmental conditions, may also contribute to competitive advantage (Dierickx & Cool, 1989). Furthermore, RBV has faced criticism for not adequately addressing the dynamic nature of the external environment (Helfat & Peteraf, 2003). Despite these critiques, RBV continues to be a powerful and influential theory within the field of strategic management (Grant, 1991), providing a robust framework for understanding the sources of competitive advantage. It has also informed the development of numerous strategic tools and techniques. Hart (1995), in a slight variation of the (Natural) Resource-Based View of the Firm, anticipated the necessity for strategy and competitive advantage to be grounded in capabilities that promote environmentally sustainable economic activities. Moreover, Hart (1995) presented a framework composed of three interconnected strategic areas integrated into overall environmental strategies: pollution prevention, product stewardship, and sustainable development.

#### 4.3.2 Resource-Based View and Green Public Procurement

Within the context of GPP, RBV offers a lens through which firms, especially SMEs, can leverage their scarce resources to not only comply with sustainability requirements but also enhance their environmental and economic performance. According to RBV, resources such as managerial skills, organizational culture, and innovation capabilities are key to successfully integrating the adherence to GPP into an organization's core strategies (Hart, 1995; Todaro et al., 2020).

GPP encourages organizations to consider the environmental impact of the products and services they procure, which, in turn, motivates firms to develop capabilities in environmental management, innovation, and sustainable supply chain practices (Testa et al., 2016b). This strategic alignment with sustainability creates opportunities for companies to differentiate themselves from competitors and improve their market positioning. Firms that can effectively combine internal resources with the demands of GPP are more likely to see long-term benefits, such as reduced operational costs, enhanced brand reputation, and increased access to green markets (Walker et al., 2012).

Furthermore, GPP is seen as a driver for SMEs to develop exclusive capabilities in green innovation and environmental performance, positioning them as leaders in the evolving green economy (Zhu et al., 2013). The development of these green capabilities is crucial because they allow organizations to respond more effectively to external pressures from regulators,

customers and other stakeholders (Porter & van der Linde, 1995). By leveraging resources such as environmental organizational culture, transformational leadership, and innovative human resource practices, among other management practices, firms can navigate the complexities of GPP, using it as a pathway to compliance and competitive advantage (Liu et al., 2019).

Moreover, companies that invest in green technologies, eco-design, and sustainable supply chain practices to become GPP candidates are more likely to build valuable and rare resources that can lead to a sustained competitive advantage (Russo & Fouts, 1997). Eligibility for GPP serves as a mechanism through which firms can develop and deploy these resources effectively, allowing them to not only meet regulatory requirements but also lead in sustainability-driven markets (Carter & Rogers, 2008).

In sum, considering GPP under the theoretical paradigm of the RBV highlights how SMEs can harness internal resources and capabilities through strategic adherence to GPP to drive environmental performance and business success. By investing resources, firms can align their operations with GPP mandates while simultaneously achieving competitive advantages and sustainability goals (Todaro et al., 2020). As the range of advanced environmental management practices is wide, this work is focused on analyzing three green human resource management (GHRM) practices: EOC, GTP, and MVS. Each of them plays a different role in the relationship with the SME's adherence to GPP: EOC acts as an explanatory variable, whereas GTP and MVS act as mediating and moderating variables, respectively, in the relationship between EOC and adherence to GPP.

#### 4.3.3 Hypotheses development

##### Environmental Organizational Culture and GPP

Organizations that adopt socially responsible policies create positive, environmentally conscious values that extend to individuals and encourage environmentally focused behaviors in employees' work tasks (Afsar et al., 2018). As environmental concerns become increasingly central to business, the integration of sustainability within an organization's core mission has emerged as an essential consideration, often demanding a substantial cultural shift for many companies (Norton et al., 2015). *"Organizations need to develop an organizational culture that fosters collaboration and proactive attitude among staff members at all levels to be able to turn sustainable strategies into practice"* (Evangelista et al., 2017, p.354). Scholars have also shown that firms with strong sustainability performance display a specific organizational culture (Isensee et al., 2020). Culture shapes organizational behavior through shared norms, values, beliefs and, attitudes (Aktas et al., 2011). Organizational culture has been defined as *"set(s) of artefacts, values, and assumptions that emerge from the interactions of organizational members"* (Keyton, 2015, p.8). Robbins (2005) considered organizational culture as a system of common perceptions. Organizational culture establishes shared values that help members understand organizational functions and set behavioral norms (Aktas et al., 2011). Additionally, Hofstede et al. (1990) viewed culture as collective mental programming that affects individual and organizational actions. Environmental Organizational Culture (EOC) specifically establishes shared values that prioritize environmental dimensions, helping members understand organizational functions and set norms for environmentally responsible behavior (Zhu et al., 2008). Hence, EOC can foster pro-environmental behaviors, defined as any observable action that supports a firm's environmental sustainability goals (Wesselink, Blok, & Ringersma, 2017). By promoting pro-environmental values, organizations cultivate a culture focused on sustainability and activate behaviors such as GPP participation, which exemplifies environmentally responsible actions (Jabbour & Santos, 2008). Based on these arguments, we propose that firms with an environmental organizational culture are more motivated to adhere to GPP.

*H1: Environmental Organizational Culture positively affects motivation to adhere to GPP.*

### **Green Training Programs and GPP**

Research suggests that adopting green human resource management practices can enhance employees' awareness and commitment to environmental conservation efforts (Ansari et al., 2020). Green training programs (GTP) are a core component of GHRM practices, fostering pro-environmental behavior and shaping corporate culture toward environmental responsibility (Ansari et al., 2020; Renwick et al., 2016). GHRM encompasses the development of environmental skills and abilities within employees, leading to positive organizational outcomes (Aragão & Jabbour, 2017). Alongside green recruitment and selection, environmental training is a key strategy for employers aiming to build green competencies within their workforce (Ansari et al., 2020). Jabbour (2013a) conducted a comprehensive review of environmental training, underscoring its importance as a central GHRM practice, while Testa et al. (2016a) emphasized its role in enhancing environmental performance, particularly by motivating adherence to GPP. As a cornerstone of GHRM, GTP support the establishment of environmental management practices and cultivates a culture that prioritizes sustainability (Jabbour et al., 2013a). Specifically, GTP encourage sustainable organizational behaviors by strengthening employees' understanding of environmental issues (Ansari et al., 2020). These programs are instrumental in developing employees' green competencies, which, in turn, increase their commitment to sustainable practices (Pinzone et al., 2016). Becoming a green supplier to public authorities represents a concrete step toward greater sustainability. Demonstrating a link between GTP and sustainable initiatives, such as the adherence to GPP, underscores the critical role of these programs in shaping organizational readiness for GPP participation, particularly given the substantial knowledge gaps that currently hinder GPP adoption, as identified by several studies on the side of public authorities (Aragão & Jabbour, 2017; Cheng et al., 2018; Testa et al., 2016a; Ortega-Carrasco et al., 2024). Therefore, we propose that firms implementing green training programs are more motivated to adhere to GPP, as presented in H2.

*H2: Green Training Programs positively affect motivation to adhere to GPP.*

### **Environmental Organizational Culture, Green training programs and GPP**

Environmental Organizational Culture (EOC) is widely recognized as a critical driver for adopting environmental sustainability practices (Zhu et al., 2008; Jabbour & Jabbour, 2016). EOC reflects the shared values, beliefs and, norms within an organization that prioritizes environmental responsibility and sustainability (Daily & Huang, 2001). These cultural elements not only shape the organization's strategic objectives but also influence individual and collective behaviors towards achieving environmental goals. In the context of GPP, EOC facilitates a shift in organizational priorities, aligning them with broader sustainability public commitments (Walker & Brammer, 2009).

Green Training Programs (GTP) play a pivotal role in operationalizing these cultural shifts. By equipping employees with the knowledge and skills necessary to implement environmentally sustainable practices, GTP serves as a foundational strategy to reinforce sustainability within organizations (Renwick et al., 2013; Pinzone et al., 2016). This underscores the importance of integrating EOC with structured training initiatives because it ensures that the organizational culture is not only aspirational but also actionable. This leads to the following hypothesis:

*H3: Environmental Organizational Culture positively influences the adoption of Green training programs.*

Research in Green Human Resource Management (GHRM) practices highlights how organizations can empower employees by nurturing a culture that values environmental

responsibility (Renwick et al., 2013; Ansari et al., 2020). GHRM practices, including green recruitment, training, and performance management, create an ecosystem in which sustainability becomes an integral part of the employee lifecycle. In particular, GTP bridges the gap between organizational culture and employee competencies, fostering an environment in which sustainability initiatives, such as GPP, can thrive (Dubey et al., 2017; Testa & Iraldo, 2010).

Although studies have established a connection between EOC and the adoption of sustainable management practices, the mediating role of GTP in linking EOC with the motivation to adhere to GPP remains underexplored (Pinzone et al., 2016). Dubey et al. (2017) suggested that sustainable management practices in the world often depend on the effective alignment of organizational culture and training mechanisms. This highlights the need to understand how training initiatives translate cultural values into measurable outcomes. Specifically, GTP may act as a mechanism that facilitates the transformation of environmental organizational culture into a tangible motivation for GPP adherence. By formalizing knowledge transfer and fostering skill development, GTPs ensure that employees are equipped to implement and sustain environmentally friendly procurement practices (Walker & Brammer, 2009).

The mediating role of GTP is particularly relevant in the context of the adherence to GPP, as it links the collective influence of EOC to individual and organizational motivations. As such, understanding this mediating relationship can provide valuable insights into how organizations can enhance their candidacy for GPP by leveraging internal cultural and training mechanisms (Testa & Iraldo, 2010). To address this issue, we propose the following hypothesis:

*H4: Green Training Programs mediate the relationship between Environmental Organizational Culture and Motivation to adhere to GPP.*

#### **Managerial Vision for Sustainability**

MVS reflects the values, priorities, and strategic vision of leaders towards environmental sustainability, acting as a driving force for embedding pro-environmental behaviors in organizations (Aragón-Correa & Sharma, 2003). When leaders champion sustainability, they create an organizational culture that supports practices such as GPP (Liu et al., 2020; Testa et al., 2016).

MVS plays a critical role in GPP by providing strategic direction, allocating resources, and fostering organizational readiness for sustainability initiatives (Bansal & Roth, 2000; Dai et al., 2014). Leaders with strong environmental values perceive GPP not merely as a compliance obligation but as an opportunity to achieve long-term strategic goals (Sarkis et al., 2010). In SMEs, where resource constraints often challenge sustainability efforts, MVS acts as a catalyst to align organizational priorities with environmental objectives (Masri & Jaaron, 2017).

From a micro foundational perspective, MVS reflects the individual-level values and actions of leaders that underpin organizational sustainability. Leaders with strong pro-environmental values are more likely to adopt advanced environmental practices, including GPP, as they prioritize sustainability in strategic decisions (Hart, 1995). These leaders influence organizational behavior by fostering a culture that supports innovation and compliance with sustainability standards (Bansal & Roth, 2000; Aragón-Correa & Sharma, 2003).

MVS is particularly relevant in moderating the effect of EOC on GPP adherence. Leaders with a sustainability-oriented vision amplify the impact of an organization's culture by ensuring that environmental values translate into actionable strategies (Jabbour et al., 2010). Conversely, the absence of strong leadership can weaken this alignment, creating barriers to GPP adoption even in organizations with robust environmental cultures (Sarkis et al., 2010).

MVS serves as a critical moderator in the relationships between EOC, GTP, and the motivation to adhere to GPP. Leaders with strong environmental values enhance GTP effectiveness by investing in employee development and fostering the skills and knowledge necessary to implement GPP successfully (Jabbour, 2013b; Liu et al., 2020). This leadership ensures that GTP initiatives are aligned with strategic sustainability objectives, increasing their impact on organizational readiness.

The moderating role of MVS underscores the significance of leadership in driving sustainability initiatives. When leaders prioritize sustainability, they create an enabling environment for GPP, whereas a lack of vision can impede progress, even in environmentally oriented organizations (Testa et al., 2016).

*H5a: Managerial Vision for Sustainability moderates the effect of Environmental Organizational Culture on Motivation to adhere to GPP.*

*H5b: Managerial Vision for Sustainability moderates the effect of Environmental Organizational Culture on the adoption of Green Training Programs.*

Leaders with a clear sustainability vision prioritize environmental training, ensuring that it aligns with the organization's long-term goals and receives the necessary resources and attention (Jabbour, 2013b; Liu et al., 2020). This leadership focus helps translate the organization's environmental culture into concrete actions such as participating in GPP proposal.

Without strong MVS, GTP initiatives may lack direction and resources, reducing their effectiveness in motivating employees to adhere to GPP (Sarkis et al., 2010). In SMEs, where resources are often limited, MVS plays a crucial role by fostering collaboration and integrating training into a company's broader sustainability efforts (Masri & Jaaron, 2017). When leadership supports sustainability, GTP becomes a more powerful tool for bridging culture and action, thus increasing the likelihood of GPP adherence. We extend our model by proposing that MVS moderates the mediating role of GTP between EOC and motivation to adhere to GPP, leading to the following final hypothesis:

*H6: The mediation of GTP between EOC and motivation to adhere to GPP is moderated by MVS.*

#### 4.4. METHODOLOGY

##### 4.4.1 Sample

The sample for this study included small- and medium-sized enterprises (SMEs) across various industries in Andalusia, southern Spain, a region in which SMEs represent 99.91% of businesses (in 2023) according to Ferrón-Vílchez et al. (2023). At this point, it is essential to note that data on organizational characteristics, such as environmental management practices, were usually collected using a customized questionnaire (Johnstone et al., 2007) because secondary information sources did not typically provide this type of internal information about the SME management practices. To obtain knowledgeable respondents, before sending the questionnaire, SMEs' contact information was obtained from the SABI database, which holds financial and economic data on over 940,000 Spanish companies (de la Torre-Ruiz & Ferrón-Vílchez, 2024). An initial sample size of 376 SMEs was determined to ensure empirical generalizability with a 5% margin of error and a 95% confidence level, eventually yielding 259 completed responses (68.88% of those contacted). Data from the questionnaire were collected through November 2022 using the CATI technique (i.e., computer-assisted telephone interviewing) in which SMEs managers were the respondents.

Our final sample comprises 206 SME managers who participated in the survey. The respondents were predominantly male (55.8%) and were between the ages of 40 and 55 (51.5%). A substantial majority held higher education qualifications (88.8%) and intermediate management positions (54.4%), with 50% reporting of tenure in their respective companies. Notably, 89.8% of the respondents were not owners of the firms they represented.

To ensure data reliability and validity, we implemented measures to control for common method variance (CMV), social desirability bias, and other potential survey biases. CMV, which refers to spurious covariance due to measurement methods rather than true relationships among constructs, was evaluated using Harman's single-factor test (Podsakoff & Organ, 1986). The results showed that no single factor accounted for the majority of variance, confirming that CMV was not a concern.

We also address social desirability bias, which can arise when respondents provide answers that are socially acceptable rather than truthful. To mitigate this, anonymity was ensured, and respondents were informed that their data would remain confidential and solely used for academic purposes. Each section of the survey began with a clear header explaining the purpose of the questions and defining key terms to minimize ambiguity and encourage honest responses (Podsakoff et al., 2003). Additionally, we balanced positively and negatively worded items to reduce acquiescence bias and response consistency bias (Furnham, 1986). Pre-testing of the survey ensured clarity and contextual appropriateness, further reducing the risk of measurement-related distortions.

These rigorous controls enhanced the validity of our findings, ensuring that they accurately reflected the realities of SMEs' environmental and operational practices in Andalusia.

#### 4.4.2 Variables

##### 4.4.2.1 Dependent variable: Motivation to adhere to GPP

Our dependent variable was "*Motivation to Adhere to GPP*". Studies such as Testa et al. (2016a) and Cheng et al. (2018) have provided insights into GPP motivations across sectors, reinforcing the importance of examining this construct. To measure this variable, we relied on an adaptation of the scale proposed by Graafland and Smid (2016). The following question was asked: "*For each environmental aspect presented below, what is the main reason that motivates your company to make efforts to improve them?*" concerning the items listed in Table 4.1. The possible values were: "0" = "No efforts are made"; "1" = "By company management's own initiative"; "2" = "Follow sector initiatives"; "3" = "Because it is required by law"; "4" = "To meet public procurement requirements"; "5" = "Due to other external pressures (e.g., required by suppliers or customers)". We counted the number of times the respondent selected the value 4, "*To meet public procurement requirements (e.g., terms in contracts with municipalities)*," for each item. The value of this variable can range from 0 to 6, where a value of 0 indicates that adherence to GPP is never the main motivation, and a value of 6 indicates that all efforts are motivated by GPP adherence.

Table 4.1: Questions made to SMEs' responsables

|                                                                |
|----------------------------------------------------------------|
| Environmental aspects                                          |
| Reduction in energy consumption (e.g., light, electricity)     |
| Increase in the use of renewable energies                      |
| Reducing water consumption                                     |
| Reduction of waste generation                                  |
| Increase in recycling                                          |
| Increase in the use of sustainable raw materials and resources |

#### 4.4.2.2 Explanatory Variable: Environmental Organizational Culture

The EOC was our explanatory variable. To measure this variable, we relied on Masri and Jaaron (2017). EOC was measured using an item that asked managers whether "*the environmental dimension is considered one of the priorities in the company*". Respondents were asked to provide a response using a Likert scale ranging from "1" = totally disagree to 7 = totally agree.

#### 4.4.2.3 Green Training Programs as mediating variable

GTP was our mediating variable. To measure this variable, we relied on the item used by Jabbour et al. (2010). GTP was measured using a Likert scale ranging from "1" = totally disagree to "7" = totally agree in response to the following question: "*The company has environmental training programs*".

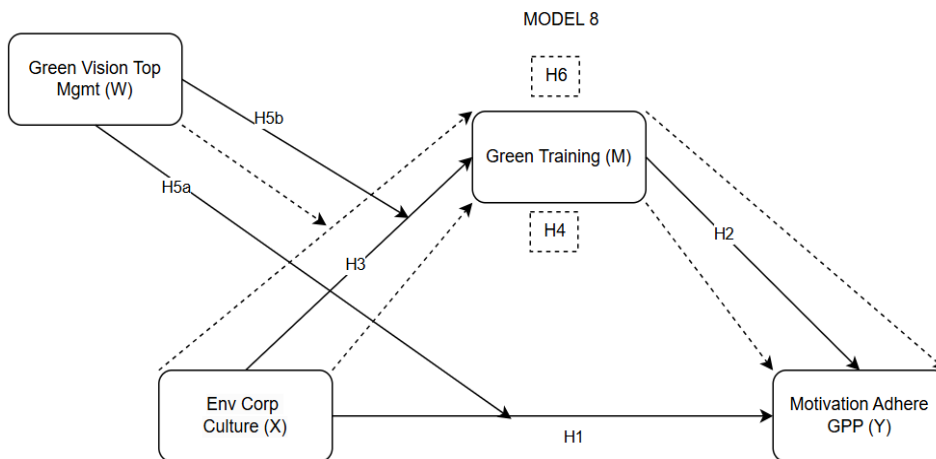
#### 4.4.2.4 Managerial Vision for Sustainability as moderating variable

MVS was our moderating variable. To measure this variable, we relied on Masri and Jaaron (2017). MVS was measured using a Likert scale ranging from "1" = totally disagree to "7" = totally agree in response to the following question: "*Top management actively supports environmental practices*".

#### 4.4.3 Model and technique used

To test our hypotheses, we used a moderated mediation analysis to assess whether the indirect effect of EOC (explanatory variable) on the motivation to adhere to GPP (dependent variable) through GTP (mediator) is influenced by the level of MVS (moderator). We employed macro-PROCESS in SPSS (Hayes, 2018)<sup>1</sup>, which enables simultaneous estimation of both direct and indirect effects in the presence of a moderating variable. This model is appropriate for our research because it allows us to assess whether the indirect effect of EOC on GPP motivation via GTP varies at different levels of MVS. In using this model, we follow the assumption of linear relationships among variables, and bootstrapped confidence intervals (based on 10,000 resamples) are generated to test for significance (Preacher & Hayes, 2008; Hayes, 2015). The model is represented in Figure 4.1.

Figure 4.1: Full model with the tested hypotheses



<sup>1</sup> In particular, we run Model #8 from the list proposed by Hayes.

## 4.5. RESULTS

### 4.5.1 Descriptive statistics and correlations

The descriptive statistics and correlations are presented in Table 4.2. The average motivation to adhere to GPP was relatively low, with a mean score of 0.29 (on a scale of 0-6) and a standard deviation of 0.948, suggesting limited adherence to GPP among the SMEs in the sample. In contrast, EOC showed a higher mean of 5.57 (on a scale of 1-7), indicating that most managers of the sample perceived that their SMEs had a strong environmental organizational culture. Similarly, MVS had a mean value of 6.24, suggesting that the managerial vision for sustainability played an important role in driving sustainability efforts in the SMEs of the sample. The standard deviations for EOC (1.370) and MVS (1.163) indicated moderate variability, whereas GTP had a mean value of 4.50 but a higher standard deviation (2.307), implying more variation across SMEs in the sample in the implementation of environmental training. Correlation analysis provides further insight into the relationships between variables.

Table 4.2: Descriptive Statistics and correlations

|                                       |                     | 1     | 2       | 3       | 4     |
|---------------------------------------|---------------------|-------|---------|---------|-------|
| <b>1. Motivation to adhere to GPP</b> | Pearson Correlation | 1     |         |         |       |
|                                       | N                   | 206   |         |         |       |
| <b>2- EOC</b>                         | Pearson Correlation | -.058 | 1       |         |       |
|                                       | N                   | 206   | 206     |         |       |
| <b>3- GTP</b>                         | Pearson Correlation | .087  | .425*** | 1       |       |
|                                       | N                   | 206   | 206     | 206     |       |
| <b>4- MVS</b>                         | Pearson Correlation | -.036 | .613*** | .319*** | 1     |
|                                       | N                   | 206   | 206     | 206     | 206   |
| Minimum                               |                     | 0     | 1       | 1       | 1     |
| Maximum                               |                     | 6     | 7       | 7       | 7     |
| Mean                                  |                     | 0.29  | 5.57    | 4.5     | 6.24  |
| Standard Dev.                         |                     | 0.948 | 1.37    | 2.307   | 1.163 |

\*\*\*. The correlation is significant at the 0.01 level.

### 4.5.2 Moderated mediation analysis results

Table 4.3 shows the overall model fit. The  $R^2$  is 0.045, indicating that approximately 4.5% of the variance in motivation to adhere to GPP is accounted for by the predictors included in the model. This significance level indicates the need for further exploration of other potential factors influencing the GPP adherence of SMEs.

Table 4.3: Outcome of the model

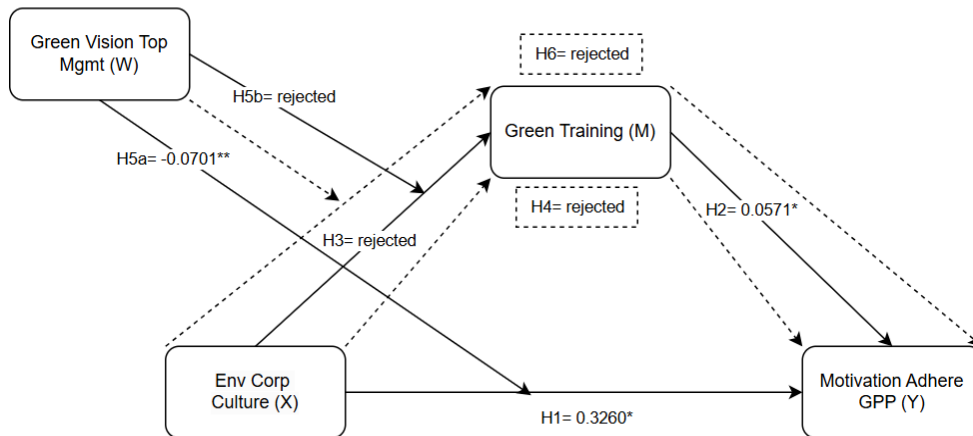
|               | R     | R-squared ( $R^2$ ) | MSE    | F     | df1 | df2   | p-value |
|---------------|-------|---------------------|--------|-------|-----|-------|---------|
| <b>Values</b> | 0.213 | 0.0454              | 0.8744 | 2.389 | 4.0 | 201.0 | 0.0522  |

The full model results are shown in Figure 4.2. The findings revealed distinct effects of EOC and GTP on motivation to adhere to GPP, i.e., some hypotheses were accepted while others were rejected.

Hypothesis 1, which stated a positive relationship between EOC and motivation to adhere to GPP, is empirically supported ( $\beta = .3260$ ,  $p = .0722$ ), showing a significant statistical association between EOC and adherence to GPP. This finding suggests that organizations fostering a strong environmental culture are more likely to motivate adherence to GPP.

#### 4. ORGANIZATIONAL DRIVERS OF GPP ADOPTION

Figure 4.2: Full model with tested hypotheses and their confirmation/refusal  
MODEL 8



Hypothesis 2, which indicated that GTP positively affects the motivation to adhere to GPP, shows a marginally significant effect of GTP on motivation to adhere to GPP ( $\beta = 0.0571$ ,  $p = 0.0702$ ). This suggests that organizations investing in environmental training can positively influence motivation towards GPP, underscoring the role of GTP in enhancing employee awareness and commitment to green practices and supporting the hypothesis that GTP foster sustainable motivation within the organization.

However, Hypothesis 3, which stated that EOC positively influences the adoption of GTP, was not supported because the coefficient is not statistically significant ( $\beta = 0.5470$ ,  $p = 0.1760$ ). This result indicates that although a strong environmental culture is beneficial, it may not independently drive the implementation of green training programs without additional factors.

In the analysis of mediation and moderation effects, Hypothesis 4, which stated that GTP mediates the relationship between EOC and motivation to adhere to GPP, was not empirically supported. The analysis showed that the indirect effect was not significant indicating that GTP does not mediate the influence of EOC on motivation to adhere to GPP in this context.

Hypothesis 5a, which indicated that MVS moderates the effect of EOC on the motivation to adhere to GPP, revealing an unexpected moderating effect. While the interaction effect was significant, it was negative ( $\beta = -0.0701$ ,  $p = 0.0185$ ), meaning that H5a was not supported. This result indicates that a strong MVS weakens the positive effect of EOC on motivation, suggesting that when top management places heavy emphasis on environmental practices, the motivational role of EOC in promoting GPP adherence may diminish.

Additionally, Hypothesis 5b, which stated that MVS moderates the effect of EOC on GTP adoption, was not supported. The moderating effect of MVS on the relationship between EOC and GTP adoption was not statistically significant ( $\beta = 0.0123$ ,  $p = 0.8528$ ). This suggests that despite top management's emphasis on sustainability, MVS does not necessarily influence whether EOC leads to the implementation of GTP.

Finally, Hypothesis 6, which pointed out the moderation of MVS in the mediation of GTP between EOC and motivation to adhere to GPP, is also refused. The index of moderated mediation was not significant (index = 0.0007, bootstrapped 90% CI [-0.0057, 0.0086]), indicating that MVS did not significantly alter the mediating effect of GTP on the relationship between EOC and motivation to adhere to GPP. This suggests that while MVS and GTP may independently impact motivation, their combined effect does not produce a significant mediated-moderated relationship, emphasizing the need for additional contextual or structural

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factors to fully drive motivation for GPP adherence. Table 4.4 summarizes the results of the model.

Table 4.4: Hypotheses summary

| <i>Hypothesis</i>                                                                                | <i>Effect</i>    | <i>Supporting value</i>                 | <i>Significance</i>     | <i>Conclusion</i>                                                                         |
|--------------------------------------------------------------------------------------------------|------------------|-----------------------------------------|-------------------------|-------------------------------------------------------------------------------------------|
| <i>H1: EOC positively affects motivation to adhere to GPP.</i>                                   | 0.3260           | p= 0.0722                               | Significant at p < 0.10 | EOC has a significant positive effect on Motivation.                                      |
| <i>H2: GTPs positively affect motivation to adhere to GPP.</i>                                   | 0.0571           | p= 0.0702                               | Significant at p < 0.10 | GTP has a small but significant positive effect on Motivation.                            |
| <i>H3: EOC positively influences GTP adoption.</i>                                               | 0.5470           | p= 0.1760                               | Not significant         | There is no strong evidence that EOC influences GTP adoption.                             |
| <i>H4: GTP mediates the relationship between EOC and motivation to adhere to GPP.</i>            | 0.0348 to 0.0361 | BootLLCI = -0.0054 to BootULCI = 0.0938 | Not significant         | GTP did not significantly mediate the relationship between EOC and Motivation.            |
| <i>H5a: MVS moderates the relationship between EOC and motivation to adhere to GPP.</i>          | -0.0701          | p= 0.0185                               | Significant at p < 0.05 | MVS significantly moderates the effect of EOC on motivation, thereby reducing its impact. |
| <i>H5b: MVS moderates the relationship between EOC and GTP adoption.</i>                         | 0.0123           | p= 0.8528                               | Not significant         | MVS does not moderate the effect of EOC on GTP adoption.                                  |
| <i>H6: The mediation of GTP between EOC and motivation to adhere to GPP is moderated by MVS.</i> | 0.0007           | BootLLCI = -0.0057 to BootULCI = 0.0086 | Not significant         | MVS does not significantly moderate the mediation of GTP between EOC and Motivation.      |

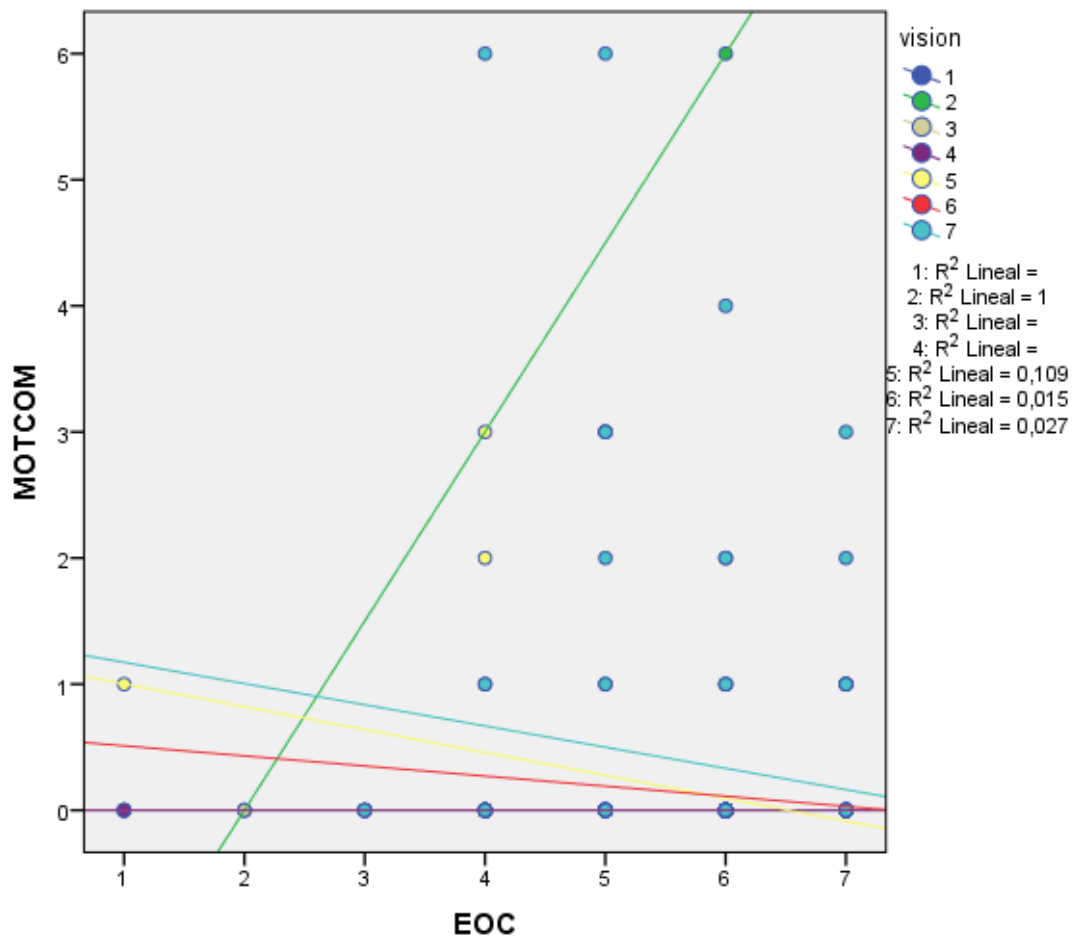
#### 4.5.3 Additional check on the moderating effect of Managerial Vision for Sustainability

The moderating effect of MVS on the relationship between EOC and motivation to adhere to GPP revealed interesting effects. The interaction between these variables demonstrated how MVS influenced the role that EOC plays in motivating SMEs of the sample to adhere to GPP. The analysis highlights two key scenarios: low MVS values (vision = 2) and high MVS values (vision = 5, 6, and 7). Figure 4.3 illustrates this moderation effect.

In the low MVS scenario, a significant positive relationship emerged between EOC and motivation to adhere to GPP, with  $R^2 = 1$ . This positive slope suggests that when MVS is low, EOC becomes a primary driver of motivation to adhere to GPP. This result indicates a substitution effect, where a robust corporate culture emphasizing environmental values compensates for the lack of a strong environmental vision from top management. In these cases, the SMEs in the sample appeared to rely on their corporate culture to motivate them to adhere to the GPP.

In contrast, for higher MVS values, the relationship between EOC and motivation to adhere to GPP weakens significantly, as evidenced by the flattening of the lines and notably lower  $R^2$  values (e.g.,  $R^2 = 0.015$  for MVS = 6, and  $R^2 = 0.027$  for MVS = 7). This pattern suggests that as top management's vision to environmental practices strengthens, the motivational role of EOC in driving GPP adherence becomes less critical.

Figure 4.3: Moderation effect of MVS on the relation of EOC and the motivation to adhere to GPP



Further analysis showed that 85% of the SMEs in the sample (i.e., 153 out of 180) were not primarily motivated by GPP, indicating that their environmental efforts were driven "*by the company management's own initiative*". This result implies that with the high MVS scenario, the SMEs in the sample are less dependent on external mandates like GPP, pursuing green actions driven by internal, personal values-led sustainability goals. In these cases, companies are effectively "green by choice," motivated by a proactive environmental responsibility stance rather than regulatory pressure.

Overall, the findings demonstrate that the role of EOC in motivating adherence to GPP is significantly influenced by the level of MVS within the organization. When managerial vision towards sustainability is low, EOC plays a crucial role in motivating GPP adherence, acting as a substitute for lower MVS levels. Conversely, when MVS is high, companies tend to follow their intrinsic tendency towards sustainability, reducing their reliance on EOC for GPP adherence. This finding supports the idea that MVS moderates the relationship between EOC and GPP adherence.

#### 4.6. CONCLUSIONS AND DISCUSSION

##### 4.6.1 Discussion

This study analyzes the relationship between organizational characteristics and SMEs' motivation to adhere to Green Public Procurement (GPP) practices. Specifically, it examines the influence of environmental organizational culture, green training programs, and managerial vision for sustainability on GPP adherence. The results make diverse contributions to the literature on GPP.

First, our findings support the positive effect of EOC on motivation to adhere to GPP (H1), which underscores the role of a strong environmental culture in fostering motivation for green practices. This result is consistent with previous studies that suggest that an environmentally conscious culture strengthens alignment with sustainability goals and encourages pro-environmental behaviors across organizational levels (DiMaggio & Powell, 1983; Wagner & Seele, 2017; Lülfs & Hahn, 2014). Embedding sustainability values within an organization through organizational culture could significantly enhance pro-environmental actions (Lülfs & Hahn, 2014), such as adherence to GPP.

Second, our results offer empirical support for the positive effect of environmental training on motivation to adhere to GPP (H2). This finding aligns with previous research on the role of environmental training in raising awareness and reinforcing employees' understanding of green procurement benefits (Aragón-Correa et al., 2013). Jabbour (2013b) noted that GTP embed green competencies within organizations, enabling employees to better recognize the advantages of adhering to GPPs. This effect is also consistent with studies by Bansal and Roth (2000) and Hart (1995), which highlighted that GTP promotes environmental responsibility, thereby fostering motivation to adopt sustainable practices within organizational settings. Nevertheless, our results did not support the positive influence of EOC on the adoption of GTP (H3). This result suggests that although a strong environmental culture may predispose an organization towards green initiatives, it does not independently drive the adoption of GTPs without additional factors, such as resources or external mandates (Delmas & Toffel, 2008). Although organizations with a robust environmental culture might prioritize green initiatives, the implementation of training programs appears to be contingent on further organizational or contextual elements (Jabbour et al., 2010; Daily et al., 2012), underscoring the complexity of translating cultural values into concrete environmental training initiatives. Furthermore, our findings did not empirically support the mediator role of GTP in the relationship between EOC and motivation to adhere to GPP (H4). This lack of mediation may stem from pre-existing environmental awareness or foundational knowledge of GPP that reduces GTP's additional impact. As Aragón-Correa et al. (2013) and Jabbour & Santos (2008) suggested, baseline environmental attitudes or knowledge levels are essential to maximizing the benefits of training programs, suggesting that organizations may need a foundation of environmental consciousness to fully leverage GTPs' potential benefits in motivating GPP adherence.

Our findings indicate that MVS positively moderates the relationship between EOC and motivation to adhere to GPP (H5a). However, the results revealed a negative interaction. Instead of strengthening the EOC-GPP relationship, MVS weakens it. This suggests that a strong managerial focus on sustainability may overshadow the influence of EOC because employees may view environmental efforts as driven by management rather than as part of the organizational culture. This aligns with Boiral et al. (2015), who noted that a strong MVS can sometimes reduce the intrinsic motivational role of culture when sustainability appears to be imposed from the top.

Additionally, in our sample, MVS did not moderate the relationship between EOC and GTP (H5b). This is consistent with Yusliza et al. (2020), who found that managerial vision alone does not guarantee the adoption of specific training programs unless there is additional institutional support. While MVS may set environmental priorities, implementation of GTP often depends on more concrete organizational resources and strategies.

Finally, our results do not support the hypothesis that MVS moderates the mediation of GTP between EOC and motivation to adhere to GPP (H6). This suggests that although MVS and GTP independently influence motivation, their combined effect does not create a significant mediated-moderated relationship. This aligns with Delmas and Toffel (2008), who argued that

although MVS can shape broad environmental objectives, it does not necessarily enhance GTPs' role in motivating GPP adherence.

#### **4.6.2 Implications for practitioners and regulators**

The findings of this study provide actionable insights for practitioners and regulators seeking to foster greater adherence to GPP among SMEs. Practitioners in SMEs can leverage these insights to enhance their organizational practices and develop internal capacities for GPP adherence. Specifically, fostering strong EOC emerges as a key driver for motivating employees towards GPP. By embedding pro-environmental values and norms, managers can encourage sustainable behavior across all levels of the organization, supporting alignment with GPP objectives (Zhu et al., 2008; Afsar et al., 2018). This culture-driven approach enables SMEs to build foundational commitment to sustainability, even when resources are limited. Practitioners are encouraged to cultivate a shared environmental vision that permeates the organization, ensuring that sustainability becomes a core value rather than a superficial mandate (Isensee et al., 2020).

Moreover, for SMEs, implementing GTP represents a practical approach to overcoming some limitations in green procurement engagement. Although training alone may not guarantee significant changes, GTPs play an essential role in enhancing employees' understanding of sustainable practices and GPP requirements (Jabbour, 2013a; Testa et al., 2016a). Environmental training fosters green competencies. Furthermore, equips employees with the necessary skills to integrate sustainable practices within their daily tasks (Pinzone et al., 2016). Regulators and policymakers could support this effort by offering subsidies or tax incentives for SMEs that incorporate green training programs, thereby reducing the financial burden on smaller firms and encouraging a more widespread adoption of GPP (Ortega-Carrasco et al., 2024).

From a regulatory perspective, this study suggests that policies should not solely focus on top-down enforcement but should also support bottom-up initiatives that build green capabilities within SMEs. While MVS plays a role in fostering GPP adherence, it can sometimes unintentionally weaken the cultural impact of EOC on GPP motivation if overemphasized (Boiral et al., 2015). Therefore, regulators should consider providing frameworks that empower organizations to cultivate both leadership support and a strong environmental culture without one overpowering the others. By encouraging an organizational structure where MVS complements rather than dominates EOC, regulators can foster a more balanced approach to GPP adoption (Robertson & Barling, 2013).

Finally, the study highlights that no one-size-fits-all approach may be effective for GPP engagement among SMEs given their unique constraints and needs. Policymakers should consider tailoring GPP guidelines to the specific capabilities and limitations of SMEs, possibly by creating scaled-down, SME-focused GPP criteria that are achievable without extensive resources (Walker et al., 2008). This approach can lower entry barriers, making it feasible for more SMEs to participate in GPP initiatives. Regulators might also consider facilitating networking opportunities between SMEs and larger firms with established GPP practices, fostering knowledge sharing to guide smaller firms towards effective sustainability practices (Zhu et al., 2013; European Commission, 2016). Collaborative networks play a crucial role in enhancing SMEs' environmental performance by facilitating knowledge exchange and resource sharing, thereby improving their ability to meet GPP criteria" (Corsini et al., 2020).

Overall, this study emphasizes that SMEs can advance their motivation and capacity to engage in GPP through internal resources such as EOC and GTP. By focusing on internal drivers and supporting a conducive regulatory environment, both practitioners and policymakers can

contribute to the broader objective of sustainable development (Carter & Rogers, 2008; Todaro et al., 2020).

##### **4.6.3 Limitations**

This study has several limitations that should be considered when interpreting the findings. First, the sample comprises 206 SMEs in Andalusia, which, despite its industry diversity, may limit the generalizability of the results to SMEs in other regions or countries that operate under different regulatory, cultural, or market conditions. Additionally, focusing on SMEs excludes insights from larger organizations, whose environmental resources and strategies may differ significantly, potentially limiting the applicability of findings across all types of businesses. Further research in different geographical scenarios, as well as with samples of companies of different sizes, will oversee complementing and offering additional support to our results.

Second, this study relies on self-reported data from managers, which could overstate their SME's commitment to sustainable practices. Furthermore, data collection occurred just after the COVID-19 pandemic, which may have temporarily shifted organizational priorities, thus affecting the representativeness of responses under typical conditions. Prospective studies that use less subjective measures can overcome this methodological limitation of the sample.

Finally, the study's cross-sectional design captures a single point in time, whereas a longitudinal approach could better reveal how motivations and practices evolve, especially as SMEs respond to changing environmental regulations and market demands. These limitations highlight areas for future research to expand upon and contextualize these findings more broadly.

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#### 4. ORGANIZATIONAL DRIVERS OF GPP ADOPTION

**5.**  
CONCLUSIONS AND IMPLICATIONS

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#### 5.1. CONCLUSIONS AND THEORETICAL IMPLICATIONS OF THE RESEARCH

This doctoral dissertation explores the role of organizational characteristics in driving CSR and sustainability practices within organizations, with a particular focus on GPP as an instrumental mechanism for sustainable development. The research is structured into three interconnected studies, each contributing insight into CSR and GPP dynamics across public and private entities. Below, the primary conclusions from each chapter are synthesized.

**Chapter 2** demonstrates how organizational characteristics such as company size, profitability, corporate reputation, and ownership structure shape the decision to signal CSR through sustainability reporting. Employing signaling and neo-institutional theories, it establishes that companies with dispersed ownership structures and positive reputations are more inclined to disclose CSR information. Furthermore, the adoption of the Global Reporting Initiative (GRI) standards emerges as a key driver of transparency and legitimacy, offering a framework for harmonizing CSR signals across industries and regions (Connelly et al., 2011; Hahn & Lülfes, 2014).

**Chapter 3** reveals, through a systematic literature review and bibliometric analysis, that GPP serves as a critical public policy tool for achieving sustainability goals. This chapter identifies key barriers and facilitators of GPP implementation, emphasizing the role of institutional frameworks, digitalization, and stakeholder collaboration. The findings underline the need for more robust methodologies to evaluate GPP's long-term impact on environmental and social outcomes, particularly in developing regions where adoption remains inconsistent (Preuss, 2007; Testa et al., 2016).

**Chapter 4** focuses on SMEs and highlights the interplay between internal organizational factors—such as green corporate culture, environmental training programs, and managerial vision for sustainability—and external pressures in driving GPP adherence. The study's moderated mediation model (Hayes, 2018) confirms that green corporate culture significantly influences SMEs' motivation to adhere to GPP, with environmental training programs acting as a mediator and managerial vision for sustainability as a moderator. These results emphasize the importance of aligning internal capabilities with external sustainability demands to overcome resource limitations and institutional challenges (Barney, 1991).

The research contributes to multiple theoretical frameworks by integrating insights from Signaling Theory, Neo-institutional Theory, and the Resource-based View into the study of CSR and GPP. The following key implications emerge:

First, the findings expand the knowledge based on Signaling Theory by demonstrating how specific organizational characteristics (e.g., reputation, ownership structure) enhance the credibility and effectiveness of CSR signals. By linking these signals to sustainability frameworks like the GRI, this thesis provides a nuanced understanding of how firms communicate their ethical commitments to diverse stakeholders (Spence, 1973; Connelly et al., 2011).

Second, this research highlights how institutional pressures—coercive, mimetic, and normative—shape organizational responses to sustainability. The transition from voluntary CSR practices to mandatory GPP compliance in certain regions underscores the evolving nature of institutional isomorphism in sustainability practices (DiMaggio & Powell, 1983; Matten & Moon, 2008).

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Finally, by examining the role of intangible assets, such as green corporate culture and managerial vision, in driving GPP adherence, this doctoral dissertation extends the RBV's application to sustainability. It underscores the strategic importance of developing internal capabilities to navigate external pressures and achieve competitive advantages through sustainability initiatives (Barney, 1991; Hart, 1995).

This doctoral thesis provides a robust theoretical and empirical foundation for understanding the drivers of CSR and GPP adoption. By integrating insights from diverse organizational contexts and theoretical perspectives, as well as private and public entities, this dissertation underscores the pivotal role of organizational characteristics in shaping sustainability outcomes. The findings not only advance academic discourse but also offer practical guidance for policymakers, managers, and stakeholders striving to enhance sustainability practices in public and private entities. Ultimately, the research reinforces the critical need for aligning internal organizational capabilities with external sustainability demands to foster long-term societal and environmental benefits (Eccles et al., 2012; Porter & Kramer, 2006).

### 5.2. IMPLICATIONS FOR BUSINESS PRACTICE

The findings of this doctoral thesis offer significant implications for businesses aiming to incorporate sustainability into their operational and strategic frameworks. Companies must recognize that fostering a culture of environmental sustainability and adopting transparent practices are not only moral imperatives but also avenues for achieving competitive advantages. Transparent communication through standardized frameworks, such as the Global Reporting Initiative, can enhance trust among stakeholders and strengthen legitimacy (Connelly et al., 2011; Hahn & Lülfs, 2014). Particularly in industries with substantial environmental impact, aligning corporate practices with internationally recognized standards serves as both a risk mitigation and value creation strategy (Testa et al., 2016; Preuss, 2007).

Developing a green corporate culture is essential for embedding sustainability into the organization's DNA. This involves investing in environmental training programs that equip employees with the knowledge and skills to implement sustainable practices effectively (Barney, 1991; Hart, 1995). Furthermore, managerial vision for sustainability plays a pivotal role in driving sustainability initiatives. Leaders who articulate a clear commitment to environmental goals can inspire organizational change and ensure alignment between sustainability objectives and corporate strategy (Hayes, 2018; Matten & Moon, 2008).

Collaboration with stakeholders, including suppliers, consumers, and regulators, emerges as another critical factor. Businesses should actively engage in partnerships that promote shared sustainability goals (Brammer & Walker, 2011; Testa et al., 2016). Such collaborations are particularly relevant in the context of GPP, where aligning internal capabilities with external requirements can yield significant environmental and economic benefits. Digital tools and platforms can further streamline procurement processes, enhance transparency, and foster innovation in sustainable solutions, making digitalization a vital enabler of successful GPP implementation (Rosell, 2021; Testa et al., 2016).

For SMEs, resource limitations often pose a challenge to adopting sustainability practices. However, leveraging intangible assets such as green corporate culture and managerial vision can offset these constraints. SMEs should focus on maximizing the utility of their internal resources to drive adherence to GPP practices and other sustainability initiatives (Barney, 1991). Additionally, businesses must remain proactive in adapting to evolving policy frameworks. Staying informed about regulatory developments ensures compliance and positions companies as leaders in sustainable procurement and other green practices (Preuss, 2007).

## 5. CONCLUSIONS AND IMPLICATIONS

Integrating sustainability into core business operations not only addresses pressing societal and environmental challenges but also creates long-term competitive advantages. Companies that align their practices with global sustainability trends can enhance their reputation, access new markets, and mitigate risks associated with non-compliance or reputational damage (Eccles et al., 2012; Porter & Kramer, 2006). These implications highlight the strategic importance of embedding sustainability within business practices, enabling organizations to contribute meaningfully to the broader agenda of sustainable development while securing their own resilience and success in an increasingly environmentally conscious marketplace.

### 5.3. LIMITATIONS AND FUTURE RESEARCH

While offering important theoretical and practical contributions, this thesis also has some limitations that suggest directions for future research. Each of the three studies has specific constraints related to its methodology, focus, and scope, which are discussed here.

The analysis in **Chapter 2** is limited by its focus on companies already committed to CSR disclosure, especially those following the GRI framework. This makes it harder to apply the findings to firms with weaker CSR practices or those in regions where such frameworks are less common. Future research could study companies with lower levels of CSR adoption, comparing different signaling strategies and their effects on stakeholder perceptions across various industries and regions. Adding qualitative methods could also provide deeper insights into how companies decide on their CSR strategies. Finally, another important limitation of this study is that it focuses on a type of reporting that is now obsolete. In the absence of homogeneous sustainability reporting standards (i.e., regulation), it was interesting to study the organizational characteristics (i.e., profiles) of companies adhering to GRI. Future research will empirically test which internal management characteristics are supportive to sustainability reporting under the new CSDR.

The systematic review and bibliometric analysis in **Chapter 3** are focused on specific regions and are based on a specific time horizon. While these methods give a broad view of GPP as a policy tool, they do not fully capture challenges faced during local implementation. Moreover, the main limitation of this work is the usual limitation of literature reviews. According to Bakker et al. (2018) stated, “review articles (...) mainly take stock of earlier work, provide a thorough overview and recommendations for further research, but do not contain original work themselves”. However, being aware of the usefulness and necessity of literature reviews, we believe that prospective research using our literature review of GPP as a reference will determine the effectiveness and impact of our work.

The study in **Chapter 4** focuses on SMEs in Andalusia, which provides useful insights but limits its applicability to other regions or larger businesses. Additionally, the cross-sectional design does not allow for conclusions about cause and effect. Future research could include larger companies and diverse regions, using longitudinal data to study how green corporate culture and GPP practices evolve. Examining external factors, like market forces, supplier networks, and customer demands, could also give a more complete view of what drives GPP adoption in SMEs.

Across all three studies, the emphasis is on internal organizational factors like managerial vision and green corporate culture. However, there is less focus on external factors that enable or hinder sustainability efforts. Future research could investigate how external policy frameworks, digital tools, and economic changes interact with internal strategies for sustainability. For example, artificial intelligence could optimize GPP by supporting data-driven decisions, improving procurement efficiency, and reducing environmental impacts. Digital platforms can also increase transparency, engage stakeholders, and promote collaboration across supply chains.

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The integration of sustainability with technological tools such as artificial intelligence or Big Data, could transform accountability and traceability in supply chains, ensuring that green procurement standards are met throughout the value chain. Research could also examine how decentralized systems improve compliance with sustainability regulations. Social innovations, like community-driven green initiatives and participatory governance, offer another area for study. These methods could help connect top-down policies with grassroots adoption of sustainable practices.

Finally, interdisciplinary research that combines environmental science, economics, and organizational behavior could develop comprehensive frameworks for addressing sustainability challenges in a globally interconnected economy.

By addressing these limitations and exploring these emerging areas, future research can deepen our understanding of the drivers of sustainability. This will not only advance academic knowledge but also provide practical insights for businesses and policymakers aiming to support sustainable development in a complex and rapidly changing world.

### 5.4. REFERENCES

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*“Faber est suae quisque fortunae”*