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The Brewing Industry as Cultural and Industrial Heritage in Spain: Digital Sustainability and CSR Disclosure

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Abstract

This study examines the extent to which Spanish brewing companies disclose sustainability- and CSR-related information through their corporate websites, interpreting such communication as a sustainability-oriented disclosure practice that may symbolically contribute to the institutional visibility and public recognition of culturally rooted productive activities. In this context, the brewing industry is understood not only as a relevant economic activity, but also as a heritage-based productive sector linked to production traditions, technical knowledge, gastronomic culture, and territorial identity. The empirical analysis applies content analysis to the websites of 106 Spanish brewing companies using 24 indicators grouped into four dimensions: general, social, environmental, and economic. The results reveal a low overall disclosure level (22.46%), suggesting that corporate websites remain underused as tools for transparency, accountability, and strategic sustainability communication. General information is the most visible dimension, while economic disclosure is the weakest; among the substantive dimensions, social information appears more frequently than environmental and economic content. These findings suggest that limited digital disclosure may reduce the institutional visibility and public projection of the brewing sector as a culturally rooted productive activity. The study contributes to the literature by linking non-financial disclosure with the recognition of heritage-based productive activities embedded in territorial identity.

Keywords: brewing industry; cultural and industrial heritage; sustainability disclosure; CSR disclosure; digital communication; territorial valorisation; local development; territorial identity

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1. Introduction

In recent decades, the concept of heritage has undergone a significant broadening, incorporating not only tangible assets but also industrial, productive and gastronomic expressions that reflect the cultural identity and historical development of regions [1]. From this perspective, heritage can be understood as a social construct linked to processes of identity, memory and cultural valorisation [2,3]. Contemporary heritage studies increasingly conceptualise heritage not as a static material legacy, but as a dynamic process of social recognition, cultural continuity, territorial embeddedness, and institutional legitimisation shaped through ongoing governance and communication practices. Within this framework, the brewing industry in Spain can be interpreted as an expression of cultural and industrial heritage, understood as a set of tangible and intangible resources derived

from historical productive activities that possess cultural, social and economic value [4]. Beer production integrates production traditions, technical knowledge and deeply rooted consumption practices, whilst having evolved from a traditional activity to a sector in which innovation and cultural heritage coexist [5,6].

Its significance extends beyond the strictly economic sphere, as the brewing industry can also be understood as a resource involved in the construction of territorial identity and the cultural projection of places. This perspective aligns with the growing importance of sustainability and the recognition of companies as agents of sustainable development, called upon to contribute to collective well-being through the integration of ethical, transparent and responsible practices [7–10]. Furthermore, the 2030 Agenda for Sustainable Development, adopted by the United Nations in 2015, has reinforced the importance of corporate social responsibility (CSR) as a tool for advancing the fulfilment of the Sustainable Development Goals (SDGs) [11]. In this context, companies are increasingly being called upon to redefine their strategies towards an approach that balances economic performance, the creation of social value and environmental responsibility.

From this perspective, the disclosure of sustainability information takes on particular importance in those sectors whose economic activity is closely linked to local production traditions, identities and cultural resources [12]. Digital communication of non-financial information has established itself as an essential practice to strengthen transparency, accountability and trust between companies and their stakeholders [13], whilst helping to reinforce the social legitimacy of organisations in increasingly demanding environments [14]. However, various studies show that many organisations still exhibit limited levels of disclosure, in many cases restricting themselves to communicating superficial or markedly promotional information [15,16]. In sectors such as the brewing industry, characterised by strong productive, cultural and territorial roots, this limited disclosure can hinder not only corporate transparency, but also the promotion of the sector itself as a cultural and industrial resource of the region.

In this regard, from a heritage perspective, a productive sector cannot survive in the contemporary era solely by relying on its historical past; it requires active social legitimisation [17]. CSR disclosure acts precisely as the operational vehicle for this legitimisation. When a brewery fails to digitally communicate its sustainability commitments, it creates a transparency gap that isolates its corporate operations from the community, ultimately weakening the public perception of the industry as a vital, continuous, and responsible component of local living heritage [18,19].

Consequently, this study analyses the disclosure of information on sustainability and social responsibility by companies in the Spanish brewing sector via their corporate websites, interpreting such communication as a form of sustainability oriented digital disclosure that may symbolically contribute to the institutional visibility and public positioning of culturally rooted productive sectors. Although industrial and food heritage has gained a growing presence in sustainability studies, there remains a disconnect between these approaches and the analysis of corporate communication. In response, this study adopts an integrative perspective and examines digital sustainability communication as a tool that can contribute to the territorial enhancement of the brewing industry, the strengthening of relationships with stakeholders, and greater visibility for a sector deeply linked to the cultural identity of the regions. This approach focuses on the sustainable use and enhancement of natural and cultural resources for territorial development and the improvement of social, economic and cultural well-being. Rather than directly measuring heritage preservation itself, the present study explores whether sustainability-oriented digital disclosure may symbolically contribute to the institutional visibility and public positioning of culturally rooted industrial sectors within contemporary sustainability governance frameworks. Accordingly, heritage is approached in this study primarily as an

interpretative and governance-oriented framework rather than as a directly measurable empirical variable.

Despite growing interest in industrial and food heritage, limited attention has been paid to how corporate digital communication may contribute to the visibility and legitimisation of heritage-based productive activities. Against this backdrop, the objective of this study is to assess the extent to which Spanish brewing companies disclose sustainability- and CSR-related information through their corporate websites and to interpret such disclosure as a mechanism that may support the public visibility and institutional positioning of brewing as a culturally rooted productive activity within sustainability-oriented governance frameworks. In doing so, the article contributes to the literature by examining how digital corporate communication may symbolically contribute to the institutional visibility and public positioning of productive activities with strong territorial and heritage-based roots.

2. Literature Review

2.1. Corporate Social Responsibility: Conceptual Evolution and Theoretical Foundations

Corporate social responsibility (CSR) has established itself in recent decades as an essential component of organisations' strategic management. Although its roots can be traced back to classic debates on business ethics, organisational legitimacy and sustainable development, it was mainly from the 1990s onwards that CSR took centre stage in the academic and business agenda. Since then, companies have ceased to be evaluated solely based on their economic performance and are now also assessed in terms of their social, environmental and ethical behaviour. This evolution has led to an expansion of the role of companies in society, as they are understood no longer merely as economic units but also as institutional actors capable of influencing multiple stakeholder groups.

Among the most influential contributions to the development of the concept is the CSR pyramid, which distinguishes four levels of responsibility: economic, legal, ethical and philanthropic [7]. This perspective emphasises that a company must not only generate profits and comply with current regulations but also act in accordance with ethical principles and contribute to the well-being of society. Based on this vision, CSR ceased to be viewed as a set of marginal voluntary actions and came to be understood as a structural dimension of business behaviour.

In addition, the concept of the triple bottom line was introduced, according to which business performance should be assessed based on a balance between three fundamental dimensions: economic, social, and environmental [8]. This formulation was decisive in linking CSR with sustainability by establishing that organisational success cannot be measured solely in financial terms, but also by the company's ability to generate social value and reduce its environmental impact. From this perspective, CSR becomes a means of integrating sustainability into corporate strategy and of moving towards more balanced and responsible management models.

The institutionalisation of the concept was reinforced by the European Commission's definition, which understands CSR as "the responsibility of enterprises for their impacts on society" [20]. This formulation emphasises the need to integrate social, environmental and ethical concerns into business operations and into the company's interaction with stakeholders. The company no longer appears as an isolated entity, but as an actor embedded within a social, economic and territorial framework from which it draws resources and which, in turn, it affects directly or indirectly.

In this vein, stakeholder theory broadened the interpretative framework of CSR by pointing out that business decisions must respond not only to the interests of shareholders, but also to the expectations of employees, customers, suppliers, local communities and institutions [9]. This perspective proved decisive in shifting the focus from a strictly

economic view towards a relational and pluralistic approach, in which the organisation's social legitimacy depends on its ability to generate value for a broad range of stakeholders. When applied to heritage-driven sectors, Stakeholder Theory implies that a company's responsibility extends to the preservation of the community's socio-cultural identity. Under this framework, CSR practices are not merely modern management metrics, but institutional mechanisms designed to safeguard the territorial and human ecosystem that makes the continuation of traditional brewing heritage possible [21].

Subsequently, this idea was reinforced by the concept of shared value, which posits that companies can improve their competitiveness whilst contributing to the economic and social progress of their environment [10]. From this perspective, CSR is not limited to a reputational or philanthropic dimension but can become a source of differentiation and a lever for value creation. In this regard, it is emphasised that responsible practices act as mechanisms for building organisational identity, particularly when effectively communicated through digital channels [22].

Taken together, these contributions enable us to understand CSR as a comprehensive management strategy aimed at reconciling economic performance, social legitimacy and environmental sustainability. This understanding is particularly relevant in sectors with strong territorial and cultural roots, where business activity not only generates economic benefits but also plays a part in the symbolic construction of local identities in the preservation of production traditions and in the social promotion of heritage resources.

2.2. Non-Financial Disclosure and Corporate Transparency

The growing relevance of CSR has been accompanied by an increased importance of non-financial reporting. This reporting involves the systematic communication of data relating to companies' social, environmental, ethical and governance performance, enabling stakeholder to assess the extent of organisations' commitment to sustainability. In this regard, corporate transparency constitutes an essential dimension of contemporary CSR, as it is not enough to implement responsible practices; it is also necessary to make them visible, explain them and subject them to public scrutiny.

In this context, the disclosure of sustainability information responds to the need to align business conduct with social expectations, whilst simultaneously helping to strengthen the trust of various stakeholders [13]. Similarly, it is emphasised that the availability of information via the internet strengthens accountability and broadens stakeholder access to relevant content regarding organisational behaviour [23]. The corporate website thus becomes a key channel for showcasing commitments, demonstrating accountability and building reputation. In this context, it is argued that digital media have transformed the relationship between organisations and the public, facilitating more open and accessible models of transparency [14]. In an environment characterised by greater social awareness of sustainability, online disclosure takes on a strategic dimension by reinforcing institutional legitimacy. It has been shown that companies that actively communicate their responsible behaviour tend to enjoy a better public perception, strengthening both their reputation and their competitive positioning [24].

However, the literature has highlighted that many organisations exhibit limited levels of disclosure. Various studies show that, in many cases, the available information is scarce, fragmentary or predominantly promotional, which limits its real usefulness for assessing responsible performance [15,16]. This situation creates a gap between corporate practices and the image projected, negatively affecting the transparency and social legitimacy of organisations.

The need to move towards greater standardisation of non-financial information has led to the development of international reference frameworks, notably the Global Reporting Initiative (GRI) guidelines [25] and Directive 2014/95/EU of the European Parliament

[26]. These initiatives have helped to consolidate sustainability reporting as an increasingly formalised business practice, linked to growing demands for comparability, traceability and accountability. Consequently, sustainability communication cannot be understood solely as a reputational exercise, but as a central dimension of contemporary corporate governance.

From a broader perspective, non-financial reporting can also be interpreted as a mechanism for mediation between business, society and the local area. Through it, organisations not only report on their practices, but also help to construct meanings around their social role, their local roots and their capacity to participate in processes of economic, cultural and environmental enhancement. This idea is particularly relevant in productive activities which, like the brewing industry, extend beyond the strictly economic sphere and are linked to notions of tradition, heritage, gastronomy and territorial identity.

2.3. CSR, Sustainability and the Sustainable Development Goals

The link between CSR and sustainability has been strengthened in recent years by the adoption of the 2030 Agenda for Sustainable Development. Adopted by the United Nations in 2015, this agenda sets out 17 Sustainable Development Goals (SDGs) that constitute a global roadmap for balancing economic growth, social inclusion and environmental protection. In this context, the private sector plays a central role as an agent of change, given that its decisions directly affect resource use, employment, innovation, consumption and social cohesion. In this context, CSR serves as an operational tool for incorporating the Sustainable Development Goals (SDGs) into organisational management [11]. Adopting responsible policies involves reviewing production models, ensuring decent working conditions, promoting equal opportunities and reducing environmental impacts. In this way, sustainability translates into concrete practices integrated into the business strategy, reinforcing mechanisms of transparency and good governance.

In this regard, it is emphasised that corporate sustainability requires minimising negative impacts and maximising organisations' positive contribution to collective well-being [27]. This vision ties in directly with the logic of the triple bottom line—economic, social and environmental [8]—as well as with the creation of shared value [10]. A sustainable enterprise is therefore defined as one that safeguards its financial viability whilst actively contributing to the balance of the social and ecological environment in which it operates. Likewise, CSR acts as a catalyst for achieving the SDGs by aligning corporate priorities with global challenges [28]. In this process, responsible disclosure of information is fundamental, as it enables progress to be monitored, provides evidence of organisational behaviour, and builds the trust necessary for external evaluation. Ultimately, robust corporate sustainability requires appropriate mechanisms for reporting, monitoring and communication [28].

In resource-intensive sectors, the relationship between sustainability and business activity is particularly relevant. In the case of the brewing sector, this connection is reflected in issues such as the efficient use of water and energy, the reduction in waste and emissions, the responsible management of packaging, eco-efficiency, productive innovation, and job creation. Therefore, the integration of sustainability in such sectors has not only internal implications for the company, but also potential effects on the local environment, the social fabric and the public perception of production activity.

From this perspective, the SDGs constitute not only a global policy agenda, but also a useful framework for interpreting how certain economic activities can be projected as sustainable local resources. When a company effectively communicates its contribution in areas such as responsible consumption, climate action, or decent work, it not only strengthens its reputation but also reinforces the social legitimacy of the sector to which it belongs and its potential recognition as a sector committed to sustainable development.

2.4. Cultural and Industrial Heritage, Territorial Identity and Valorisation of Productive Activities

In parallel with the development of the literature on sustainability, the concept of heritage has undergone a profound transformation. In contrast to traditional views centred on material assets, current approaches integrate intangible, industrial, landscape, and productive dimensions. In this sense, heritage is understood as a social construct resulting from processes of selection and valorisation [2]. Furthermore, this concept is closely linked to identity, territory and the plurality of meanings that societies attribute to their past [3].

Within this expanded conceptual framework, industrial heritage is defined as the set of tangible and intangible resources linked to historical productive activities that possess intrinsic cultural, economic and social value [4]. This definition allows for the inclusion not only of facilities, technologies or production processes, but also of technical knowledge, forms of work organisation, business traditions and consumption practices associated with specific activities. In this way, certain industries can be interpreted not merely as economic sectors, but also as expressions of heritage capable of articulating memory, identity and local development.

Food and gastronomy have taken on an increasingly prominent role as heritage assets. It has been demonstrated that culinary practices can become regional attractions and vehicles for local development by encapsulating traditions, landscapes and identities [5]. In this vein, an analysis of the brewing sector reveals how traditional productive activities can undergo simultaneous processes of innovation, cultural revitalisation and market repositioning [6]. Consequently, this sector provides an appropriate and highly dynamic case study to explore the contemporary tension between traditional production, regional identity, and modern institutional demands. To understand this intersection, current heritage doctrine increasingly relies on the “Living Heritage” approach. As articulated by [1], the long-term safeguarding of living heritage depends fundamentally on its ability to maintain core cultural values while remaining compatible with contemporary societal expectations. This framework introduces a crucial nuance regarding sustainability standards like the Sustainable Development Goals (SDGs): while these international criteria are inherently universalist and macro-level in nature, their operationalisation and impacts are fundamentally local and territorial. Therefore, when evaluating traditional, territory-rooted firms through standardised sustainability indicators, the focus is not on claiming that the SDGs are heritage-specific metrics, but rather on monitoring how these firms utilise modern accountability vehicles to renew their social licence to operate within their specific regions.

From this perspective, beer can be understood not only as a consumer good but as a cultural and productive manifestation rooted in specific social and territorial contexts. Its production incorporates technical knowledge, origin stories, links to the territory, consumption traditions and symbolic elements that contribute to the construction of collective identity. Furthermore, its public profile can reinforce the recognition of specific places, consolidate territorial imaginaries and fuel dynamics of economic and cultural valorisation. The notion of territorial valorisation refers precisely to the process by which certain resources—natural, cultural, industrial or gastronomic—acquire visibility, meaning and capacity to generate development within a territory. This process does not depend exclusively on the existence of the resource, but also on the discourses, narratives, practices and strategies through which that resource is interpreted and socially projected. In this sense, corporate communication can play a significant role, as it helps to highlight certain attributes of production activity, reinforce its legitimacy and link it to values of sustainability, quality, identity and responsibility.

Thus, when an economic activity with historical and cultural roots clearly communicates its social and environmental commitments, it not only improves its transparency but

functions as an operational vehicle for its contemporary validation as living heritage, as established by the integration of sustainability into heritage governance frameworks [1]. This idea is fundamental for sectors such as the brewing industry, where production activity is not limited to the manufacture of a good, but is embedded within a broader network of cultural, territorial and social meanings. From a contemporary heritage perspective, industrial heritage is not exclusively defined by the physical preservation of productive assets but also by the social processes through which economic activities become symbolically recognised, territorially embedded, and institutionally legitimised within collective cultural narratives.

2.5. Corporate Communication, Sustainability and the Territorial Impact of the Brewing Sector

The intersection between CSR, heritage and territory takes on particular significance when analysing corporate communication in sectors with strong cultural roots. In this context, the disclosure of information on sustainability can be understood as more than just a transparency measure: it may operate as a symbolic mechanism through which culturally rooted productive sectors construct institutional visibility, public legitimacy, and territorial recognition within contemporary sustainability governance contexts. Through their websites, companies not only report on their commitments but also construct a specific representation of themselves, their relationship with their surroundings, and the value they attribute to their own activity.

In the case of the brewing sector, this issue is particularly relevant. It is an industry that combines significant economic importance with a strong cultural and social dimension, linked to production traditions, consumption habits, gastronomy and local identity. Consequently, responsible communication within the sector can serve a dual purpose. On the one hand, it allows companies to demonstrate their commitment to sustainability, ethical management and transparency. On the other, it may symbolically contribute to the public visibility and institutional recognition of the sector as a culturally rooted productive activity. Crucially, this connection establishes that CSR and heritage are not independent, parallel variables, but deeply interconnected dimensions of corporate survival. A brewery's heritage assets (such as traditional recipes, historical facility sites or regional gastronomic reputation) require the active framework of CSR—specifically environmental care, local employment and ethical governance—to be perceived as a positive local resource rather than an extractive industrial activity. Thus, digital CSR communication serves as the explicit link where corporate responsibility justifies and ensures the sustainable continuity of the sector's heritage values [2,29,30].

However, when communication is scarce or superficial, a disconnect arises between the sector's heritage and territorial potential and the public image it projects. In such cases, the limited presence of content on sustainability, innovation, eco-efficiency, social commitment, human rights, ethical codes, or community relations can hinder the sector's visibility as a cultural and industrial resource with social value. Thus, the lack of communication not only affects corporate transparency but also the sector's ability to position itself as an activity aligned with sustainability and the enhancement of the local area.

From this perspective, the brewing industry provides a suitable case study for examining how digital communication can act as a bridge between business management and the regional impact of productive activities. Analysing the type of information that companies disseminate and the frequency with which they do so allows us to examine the extent and visibility of sustainability-related communication practices disclosed through corporate websites. This approach is particularly relevant in a context where economic activities are increasingly valued not only for what they produce, but also for how they relate to society, the environment and the local area[31].

This perspective aligns with contemporary heritage governance approaches, which increasingly emphasise the role of communication, institutional participation, and social recognition in the ongoing construction and legitimisation of heritage-based productive activities.

3. Methodology

This study adopts an empirical, descriptive and exploratory design based on the content analysis of information disclosed by companies on their corporate websites. This approach allows for a systematic examination of the presence or absence of content linked to sustainability and corporate social responsibility (CSR), understanding such disclosure as an observable form of sustainability-oriented corporate communication rather than as direct evidence of the substantive implementation or effectiveness of responsible practices. In this case, it is considered as a potential mechanism through which sustainability-oriented communication may contribute to the institutional visibility of culturally rooted productive activities [32].

Content analysis is particularly well-suited to this purpose, as it enables the transformation of qualitative information available in digital environments into comparable and systematically data. Furthermore, it has been widely used in previous research [33–36] focused on the study of responsible disclosure on institutional and corporate websites, in both the public and private sectors. Consequently, its application to the Spanish brewing sector facilitates comparability with previous work on non-financial disclosure and organisational transparency.

From an analytical perspective, the study is based on the premise that corporate digital communication constitutes a relevant dimension of corporate sustainability by making social, environmental and economic commitments visible to stakeholder. In sectors with strong productive and cultural roots, such as brewing sector, this communication also takes on an additional dimension, as it contributes to the public legitimisation of the activity and its recognition as part of a productive heritage linked to the local area.

3.1. Scope of the Study and Sample Selection

The research focuses on companies in the beer manufacturing sector based in Spain. The choice of this sector stems, on the one hand, from its economic, social and productive significance within the national context and, on the other, from its potential to be regarded as an activity linked to cultural and industrial heritage, given its connection to production traditions, territorial identities and deeply rooted consumption practices. The brewing industry in Spain constitutes a significant pillar of the national economy, contributing over 17,200 million euros to GDP—1.3% of the total—and supporting more than 540,000 workers directly and indirectly. Furthermore, in 2024, Spain remained the second-largest beer producer in the European Union, behind only Germany. Added to this is the sector's growing commitment to sustainability, reflected in progress towards reducing water and energy consumption, lowering carbon emissions and improving packaging use, with the aim of moving towards production that is increasingly free of waste and pollution.

To analyse the leading companies in the Spanish brewing sector, we have used the sectoral ranking corresponding to CNAE code 1105 (beer manufacturing). This ranking classifies companies in the sector according to economic indicators such as turnover, using business data from commercial databases. The sectoral classification is based on the CNAE system (National Classification of Economic Activities), established by the National Statistics Institute, which allows companies operating within the same economic activity to be identified and compared. The sample analysed comprises 106 companies from the Spanish brewing sector. This selection forms the empirical basis of the study and provides a broad overview of the disclosure practices of organisations operating in this

field. The analysis was carried out between January and June 2025, situating the observation within a defined and uniform timeframe for all units analysed.

3.2. Data Collection Method

The technique employed was content analysis of the corporate websites of the companies included in the sample, a procedure already used in similar research focused on the study of responsible disclosure. Using this methodology, the companies' websites were systematically reviewed in order to identify the presence or absence of information relating to different dimensions of CSR and sustainability. The choice of the corporate website as the primary source of information is based on several reasons. Firstly, it constitutes the most accessible and widespread digital channel for disseminating corporate content to diverse audiences. Secondly, it allows for a direct observation of the company's willingness to make certain commitments, practices or institutional narratives visible. Finally, it facilitates comparison between organisations based on a standardised, public, and verifiable medium.

This methodological strategy is underpinned by established research examining organisations' orientation towards transparency, sustainability and CSR through digital means. Approaches similar to those proposed by various authors over the last decade have been followed, who validate web content analysis as an effective tool for assessing responsible behaviour and corporate communication [15,22,37–39].

3.3. Analysis Tool

A system of indicators adapted from the proposal by [15] was used to collect and systematise the information. This adaptation resulted in a tool comprising 24 indicators, organised into four main areas of analysis: general information, social information, environmental information and economic information. This system allows sustainability reporting to be broken down into distinct dimensions and enables the relative weight of each dimension to be observed in the corporate communication of the companies analysed.

The general information block comprises four indicators relating to the existence of a website, the accessibility of content and the availability of social responsibility reports. The social block includes nine indicators linked to issues such as social benefits, sponsorship and patronage, work–life balance, inclusion of people with disabilities, continuous training, equal opportunities, human rights, occupational health and safety, and customer satisfaction. The environmental section comprises five indicators relating to certifications, environmental audits, innovation projects, waste management and eco-efficiency programmes. Meanwhile, the economic section includes six indicators relating to mission, values, and vision linked to CSR, brand management, adherence to the United Nations Global Compact, cost reduction, the existence of a code of ethics, and transparency of information.

3.4. Coding Procedure

Once the instrument had been defined, the content of each company's website was reviewed and the presence or absence of each of the 24 indicators was coded. A dichotomous scale was used for this purpose, assigning a value of 1 when the item was present and the value of 0 when it was not disclosed on the corporate website. This procedure allows the qualitative information observed to be transformed into a quantifiable data matrix, facilitating the subsequent calculation of aggregate disclosure indices. The use of this dichotomous coding meets the criteria of simplicity, replicability and methodological consistency, and is supported by previous studies [11,13,15,16,23,28]. Through this approach, the analysis focuses not on the quality or depth of the discourse, but on the actual

existence of disclosed information regarding each sustainability dimension considered in the study.

3.5. Construction of Disclosure Indices

In order to synthesise and compare the information collected, the study uses an adapted system of disclosure indices [15,28]. The measurement is carried out in two complementary phases: first, disclosure is calculated by company and by block, and subsequently aggregate indices are obtained by item, by block and for the sample as a whole.

Firstly, the Disclosure Index by Company per-Block (CDIB) is calculated, which measures the percentage of disclosure achieved by each company within each of the blocks considered. Next, the Disclosure Index by Company (CDI) is obtained, which captures the total disclosure of each entity based on the combination of its results across all blocks. In a second phase, the Disclosure Index by Item (IDI) is calculated, which expresses the percentage of companies in the sample that disclose each specific indicator. Subsequently, the Disclosure Index by Block (BDI) is obtained, which summarises the total disclosure of all companies in each of the major dimensions analysed. Finally, based on the values of the different blocks, the Total Disclosure Index (TDI) is calculated, which expresses the average level of disclosure of the sample in relation to the total information considered in the analytical tool. The index system incorporates a specific weight for each block based on the number of indicators comprising it, which allows the calculation to be adjusted and avoids distortions arising from the different scope of each dimension.

3.6. Variables and Dimensions of Analysis

The methodological structure of the study is therefore based on four main dimensions of disclosure: general, social, environmental and economic (Table 1).

Table 1. Table of indicators.

Dimension	Definition	No. of Indicators
Dimension 1	General Information	4
Dimension 2	Social Information	9
Dimension 3	Environmental Information	5
Dimension 4	Economic Information	6
	Total indicators	24

Source: Adapted from Nevado and Gallardo [15].

Each one responds to a specific logic within sustainability communication: the general dimension captures the basic infrastructure for access to information; the social dimension examines the projection of commitments to individuals and groups; the environmental dimension covers content related to reducing ecological impact; and the economic dimension incorporates strategic, ethical and organisational transparency elements. This framework enables us to interpret corporate sustainability from a multidimensional perspective that is consistent with the literature on CSR. At the same time, in the context of this study, it provides a useful basis for understanding the extent to which companies in the brewing sector communicate aspects that may contribute not only to their corporate legitimacy, but also to the symbolic and social value of the activities they undertake.

3.7. Scope and Rationale of the Methodological Approach

The approach adopted offers several analytical advantages. First, it allows for the examination of a large number of companies using a standardised and replicable procedure. Secondly, it facilitates the identification of general sectoral trends in sustainability communication. Thirdly, it makes it possible to link digital transparency with a broader understanding of the social and cultural role of the brewing sector, given that the presence or absence of certain content influences how the activity is perceived by the public.

However, it should be noted that the analysis is limited to the information actually disclosed on corporate websites. Therefore, the results reflect the degree of visible communication of responsible practices, but do not allow for a conclusive assertion that the absence of information necessarily implies a lack of actions in the business reality. In this sense, the methodology is geared towards measuring digital transparency and not directly auditing the internal behaviour of organisations. Even so, this approach is relevant to the study's objective, given that corporate communication constitutes in itself a strategic dimension of sustainability and social legitimacy. In sectors with cultural and industrial significance, such as the brewing sector, what is communicated also influences the sector's public visibility, its social recognition, and its ability to project itself as an activity linked to values of responsibility, identity and regional roots.

Based on this methodological design, the study enables the identification of both the overall level of responsible communication within the Spanish brewing sector and the differences between specific dimensions and indicators. The results obtained therefore provide an empirical basis for analysing the extent to which the sector's digital communication reflects commitments to sustainability and the degree to which such communication promotes—or limits—the social and symbolic image of the brewing industry as an activity with cultural and industrial value.

To analyse the sustainability-related information disclosed, disclosure indices were created based on previous studies [15,28]. The measurement was carried out in two phases. First, disclosure per company was measured in each dimension using an initial index (CDIB), and then a total index per company (CDI) was calculated. Next, the total disclosure of each indicator (IDI) was calculated, creating an index for each block disclosure of information (BDI). Finally, the total disclosure for the sample (TDI) was determined (Table 2).

Table 2. Disclosure rates.

Indices	Concept	Expression
Company Disclosure Index per block (CDIB)	Measures the percentage of total disclosure of each company on each of the proposed blocks.	$CDIB_j = \left(\frac{\sum_{i=1}^M (A_{ij})}{M} * \gamma \right) * 100$
Company Disclosure Index (CDI)	Measures the total disclosure of each company.	$CDI_j = \sum_{i=1}^B (CDIB_j)$
Item Disclosure Index (IDI)	Measures the percentage of companies reporting each item.	$IDI_i = \frac{\sum_{j=1}^N (A_{ij})}{N} * 100$
Block Disclosure Index (BDI)	Measures the total disclosure of all companies in each block.	$BDI_i = \frac{\sum_{j=1}^M (IDI_i)}{M} * \gamma$
Total Disclosure Index (TDI)	Measures the total disclosure of the sample.	$TDI = \sum_{i=1}^B (BDI_i)$

Source: Adapted from Carvalho et al. [28]. Where M = number of items forming each block; B = number of blocks; A_{ij} = takes the value of 1 if the characteristic defining indicator (i) is present in company (j), and 0 otherwise; N = number of companies; γ = weight assigned to each block, accord-

ing to its number of indicators. As there is no empirical evidence regarding the relative importance of the various sub-indices that make up the overall index, the same weighting has been assigned to each of the dimensions (25%) [16].

4. Results

As can be seen in Figure 1 (see Appendix A1), the components of the general category are the most widely reported (10.85%), whilst financial information is the least widely reported, at 3.22%. This is followed by the components relating to the disclosure of information on the social dimension, at 4.43%, and environmental information, at 3.96%. It can be said that companies' commitment to the social, economic and environmental dimensions is fundamental to sustainable economic development, whether from the perspective of the triple bottom line based on these three dimensions ([8] cited in [27]) or from the perspective of the strategic importance of Social Responsibility in business management ([40] cited in [27]).

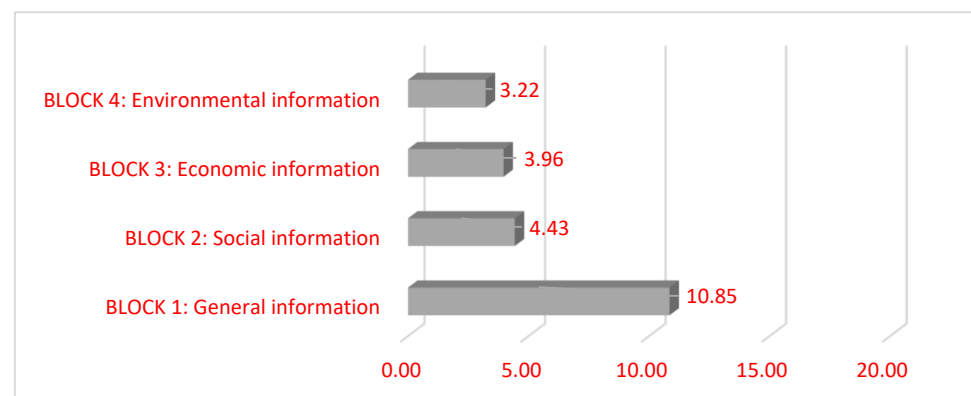


Figure 1. Disclosure by analysis block.

The Disclosure Index by Item (IDI) allows us to identify, within each axis of analysis of information availability, the percentage of companies that report on each of the items assessed. It can be seen that, with regard to axis 1, general information (Figure 2), the majority of companies have a website (70.75%), and some of them provide direct access to the information (23.58%) and ease of access (67.92%); however, the majority of manufacturing companies in this sector do not have a CSR report or do not make it available to their consumers (11.32%).

On the second block, social information (Figure 3), we find that a proportion of companies in the sector provide evidence of respect for human rights (35.85%), with a very similar proportion providing information regarding customer satisfaction (33.96%). As for sponsorship and patronage activities, only 16.04% engage in such initiatives, with just 15.09% providing information on occupational health and safety. Furthermore, it should be noted that 14.15% of the companies analysed provide information on welfare schemes and social benefits, and only 10.38% provide information on continuing professional development and the employment of disabled staff. Finally, it should be noted that only 9.43% of the sample provide information on work–life balance schemes, which is very low.

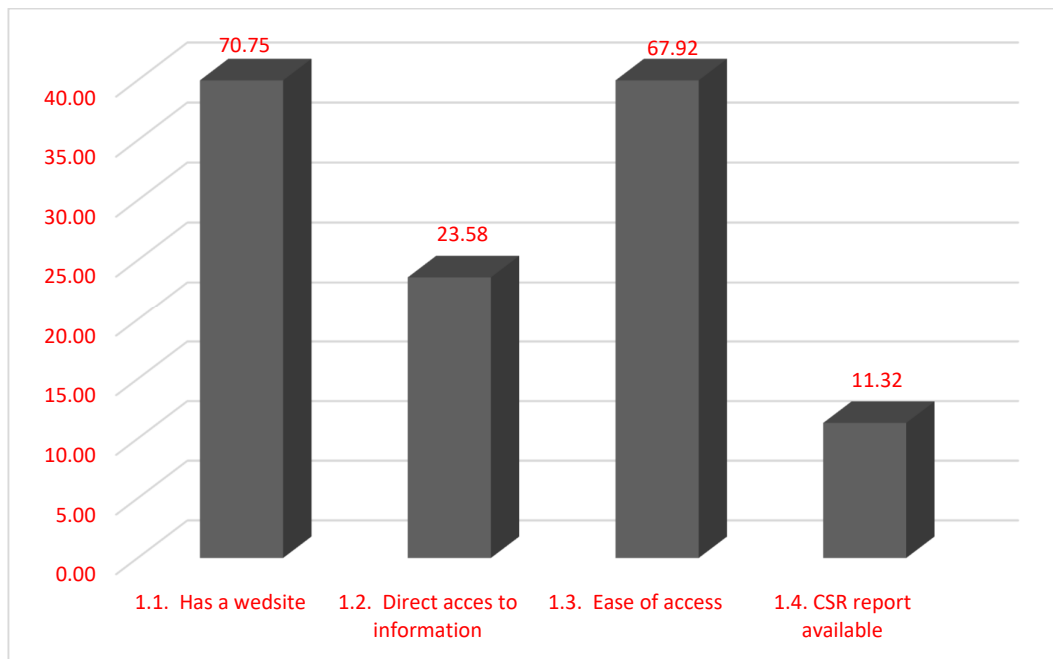


Figure 2. Block 1: general information.

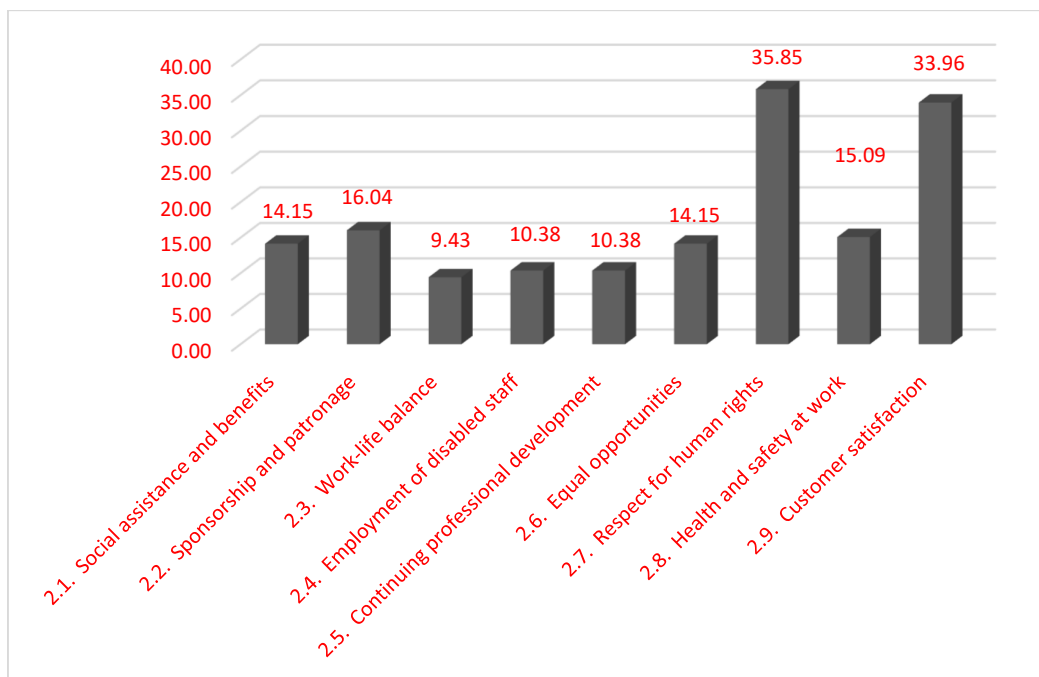


Figure 3. Block 2: social information dimension.

An analysis of Block 3, environmental information (Figure 4), reveals that 22.64% of the companies in the beer manufacturing sector analysed have innovation projects, with 19.81% disclosing information on eco-efficiency programmes. Meanwhile, 17.92% have waste management in place, and only 10.38% hold ISO certification. Finally, it is worth noting that only 8.49% of the companies in the sample carry out environmental audits.

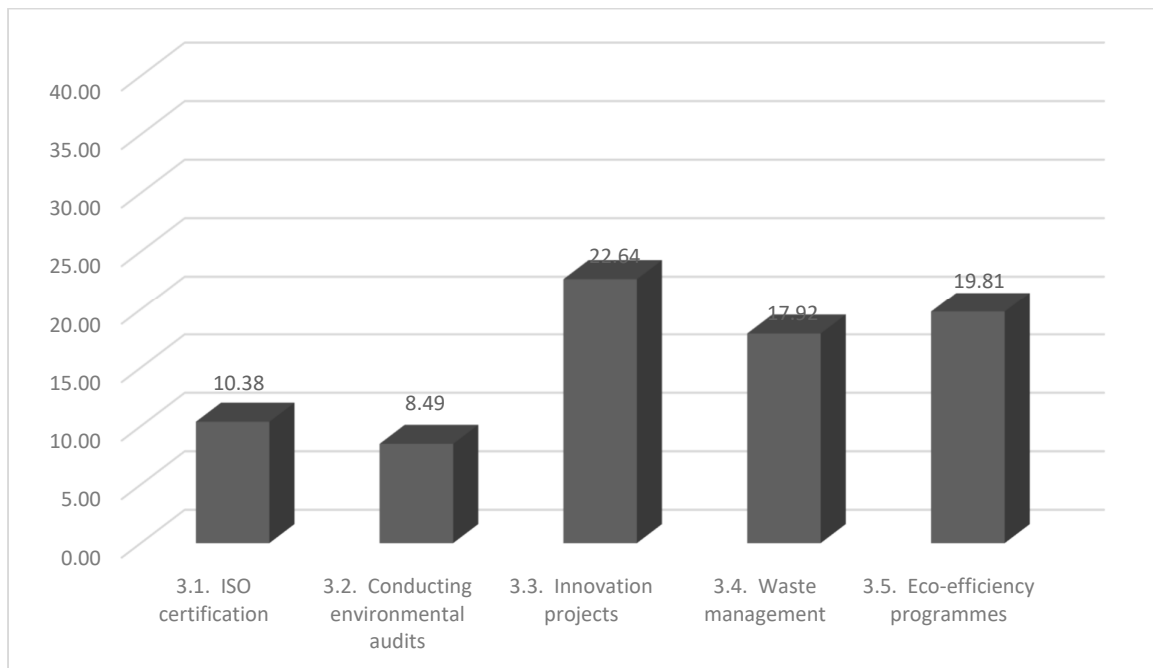


Figure 4. Block 3: environmental information.

As shown in Figure 5, on Block 4, economic information, the disclosure index for each item revealed that the vast majority of companies do not publish relevant economic information online. In this final dimension, we can state that the breweries analysed have low information transparency (6.60%); some of them comply with the United Nations Global Compact (12.26%); a few more focus on cost reduction (13.21%); and a similar percentage have a code of ethics and conduct (14.15%). The highest percentage of information disclosed in this dimension is found in the inclusion of CSR mission, values and vision (16.04%), followed by good brand management (15.09%).

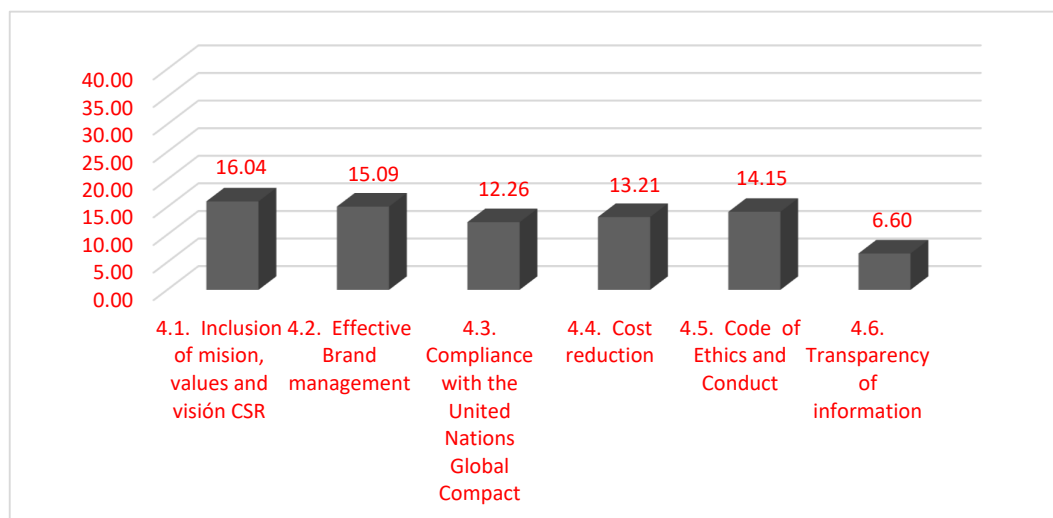


Figure 5. Block 4: economic information.

The total disclosure index (TDI) obtained (Appendix A2) indicates that in the companies in the sample report, on average, 22.46% of the total CSR information was analysed. The figure obtained is therefore well below the total expected level of disclosure to the public regarding the CSR practices of the companies in the sample. With regard to the

ranking of the companies analysed, MAHOU S.A., CERVEZAS MAHOU S.L. and CERVEZAS SAN MIGUEL S.L. stand out with a rate of 93.75%, followed by HIJOS DE RIVERA S.A., with a score of 89.44% and CERVEZAS GRAN VÍA S.L. with 83.89%. It can therefore be observed that there is a very low level of sustainability-related information disclosed via the companies' websites, given that only 15% of the companies analysed have a disclosure index above 50%.

5. Discussion

The results obtained show that the disclosure of information on sustainability and social responsibility in the Spanish brewing sector remains limited, suggesting that the companies analysed still make insufficient use of their websites as tools for transparency, accountability, and institutional visibility. The total disclosure index achieved highlights a gap between the growing strategic relevance of sustainability in business management and its effective communication in the digital environment. This situation is particularly significant in a sector such as the brewing industry, whose activity is not only economically significant but also has a notable cultural, industrial and regional dimension.

From this perspective, the findings can be interpreted in two ways. On the one hand, they confirm that non-financial disclosure remains an underdeveloped practice in many organisations, in line with previous studies that highlight the persistence of low levels of transparency and communication that is often partial or promotional [13,15,16]. On the other hand, in the specific case of the brewing sector, this lack of visibility carries a distinct implication for its institutional standing. While the empirical metrics applied in this study monitor standardised CSR dimensions rather than explicit heritage criteria, this transparency deficit may limit the institutional visibility through which the sector positions itself as a contemporary production activity aligned with modern sustainability values. In the framework of living heritage, a traditional industry cannot rely exclusively on its historical past for social acceptance; it requires active validation through modern accountability, a process where digital communication serves as a key operational vehicle [41–43].

The predominance of general information over social, environmental and economic dimensions suggests that a large proportion of companies are still at a basic level of digital presence, where minimal accessibility to information takes precedence over structured and strategic communication of their responsible commitments. The fact that most have a website and offer certain levels of accessibility, yet only a very small proportion publish CSR reports, reflects that the digital infrastructure exists, but it is not fully exploited to communicate sustainability in a systematic manner. Consequently, the corporate website appears to function more as an institutional or commercial showcase than as a consolidated space for accountability.

The social dimension, whilst being the most visible among the substantive topics, also shows modest figures, suggesting that the link between business and society is only partially communicated. Higher levels of disclosure on issues such as human rights and customer satisfaction may indicate that companies prioritise those topics most likely to generate immediate legitimacy among external audiences. However, the limited presence of information on work–life balance, continuous training, workplace inclusion or social benefits undermines the image of a truly comprehensive social responsibility. This pattern aligns with the notion that many organisations strategically select content that offers the greatest reputational return, relegating other equally relevant dimensions of social performance to the background. From a heritage standpoint, this partial engagement weakens the human and community dimension of the industry. Since living heritage is intrinsically sustained by the social fabric and the local workers who preserve these traditional production activities, the lack of digital transparency regarding internal social practices limits the public recognition of the sector as a responsible custodian of regional human capital.

In the environmental sphere, the results reflect an ambivalent situation. The presence of references to innovation projects, waste management or eco-efficiency programmes suggests that some companies publicly communicate sustainability-related initiatives associated with their production processes. However, the low presence of ISO certifications and environmental audits indicates that these initiatives do not always translate into formalised management mechanisms or, at the very least, are not clearly communicated in the digital sphere. This issue is particularly relevant in a resource-intensive industry, where aspects such as the efficient use of water and energy, emissions reduction or waste management are of central importance both for corporate sustainability and for the sector's social legitimacy. From a heritage perspective, if a sector with deep territorial roots is perceived by local communities as environmentally extractive rather than responsible, its institutional recognition as a culturally rooted productive activity may become more difficult to sustain within contemporary sustainability-oriented public narratives. Therefore, while our data measures environmental indicators and not heritage per se, the low presence of formalised environmental communication reveals a risk: the industry fails to digitally justify the environmental sustainability of the territories it historically occupies [29,42].

The economic dimension is the one with the lowest levels of disclosure and highlights a significant weakness in terms of governance, transparency of information and the formalisation of responsible commitment. The limited communication of aspects such as the code of ethics, adherence to the Global Compact or financial transparency can be interpreted as an indicator of limited maturity in the strategic integration of sustainability. Added to this is the fact that, although certain content such as the mission, vision and values linked to CSR appear somewhat more frequently, their isolated presence is not sufficient to consolidate a robust narrative of corporate responsibility. In this regard, the results suggest that sustainability is communicated more as a declarative attribute than as the backbone of corporate positioning. In terms of industrial heritage governance, this lack of structural formalisation prevents corporate history from transitioning into a trusted institutional asset, as ethical governance is the modern baseline required to validate any traditional economic activity.

Beyond the usual interpretation in terms of non-financial disclosure, the findings take on additional significance when analysed through the lens of living heritage and legitimacy theory. If we start from the premise that the brewing industry possesses historical, symbolic and territorial roots, its long-term survival as a recognised cultural expression depends on its capacity to remain compatible with contemporary societal expectations. Herein lies the conceptual connection with our data: the limited communication of social, environmental and ethical commitments (22.46%) creates a digital transparency gap. This gap does not directly diminish the sector's objective historical heritage, but it may limit the public visibility through which the modern brewing industry positions itself as a sustainability-oriented productive activity in contemporary institutional narratives. Furthermore, the low level of disclosure observed may constrain the institutional visibility through which the sector symbolically positions itself within sustainability-oriented public narratives, leaving important dimensions of its territorial and cultural rootedness weakly represented in the digital sphere [17,19].

This idea allows for a broader interpretation of digital transparency. Corporate communication not only informs the public about what companies do but also helps to imbue certain economic activities with public significance. In sectors with strong cultural and territorial roots, such communication can act as a mechanism of legitimisation, for connecting with stakeholders, and for the symbolic valorisation of the sector. From this perspective, communicating sustainability is not merely related to corporate reputation, but may also contribute to the symbolic public framing through which production activities be-

come associated with territorial identity and heritage-oriented narratives. The absence or weakness of such communication can, therefore, hinder the development of territorial narratives capable of reinforcing the sector's social recognition.

The results also suggest that there is a certain disconnect between the beer sector's potential to integrate into broader sustainable development strategies and the way in which this potential is made visible in the digital space. The literature on stakeholder and shared value emphasises that corporate legitimacy increasingly depends on organisations' ability to generate not only economic benefits, but also social and environmental ones [9,10]. In this study, however, the low intensity of communication suggests that many companies still do not fully utilise digital communication as a tool to strengthen that legitimacy or to demonstrate how their activities can contribute to collective well-being, local roots or the sustainability of the environment in which they operate.

In this regard, the findings are consistent with the triple *bottom line perspective* [8], as they show that corporate communication on sustainability remains unbalanced and incomplete. Although there are signs of attention being paid to certain social and environmental issues, the sector's overall image continues to reflect only a partial integration of the three dimensions of sustainability. This situation limits both accountability and the beer sector's ability to position itself as an industry aligned with the Sustainable Development Goals, particularly in areas such as decent work, responsible production, innovation, and climate action.

This framework regarding the contemporary validation of heritage also opens up important avenues for future research, particularly concerning the structural asymmetry of the sector. While this study provides a valuable baseline by analysing aggregate digital disclosure, future investigations should explicitly segment these indices based on firm size. The absence of such segmentation in the present study prevents a differentiated interpretation of how digital communication capabilities may vary between large corporate groups and small heritage-based producers. In the Spanish brewing context, a stark contrast exists between a few large corporate groups and a vast network of microbreweries [44]. It is highly relevant to consider that smaller, localised producers—who structurally embody traditional methods, regional ingredients, and the intangible heritage of brewing—might lack the digital capabilities to communicate their commitments, leaving the most traditional segment of the industry invisible under modern transparency standards [45].

In practical terms, the discussion suggests that an improvement in digital communication could yield benefits at various levels. At the corporate level, it would promote greater transparency, strengthen stakeholder trust and help consolidate corporate identity. At the sectoral level, it would help to enhance the visibility of the brewing industry as a productive sector committed to sustainable practices. And on a broader level, it would facilitate the appreciation of beer and its industry as a cultural and industrial expression linked to traditions, territories and ways of life, thereby extending its social recognition beyond its strictly economic dimension.

In short, the main interpretative contribution of the results lies in showing that the limited disclosure of sustainability observed in the Spanish brewing sector should not be understood solely as a shortfall in corporate reporting, but also as a limitation affecting the institutional visibility and symbolic public positioning of the sector as a culturally rooted productive activity within contemporary sustainability-oriented narratives. In this way, the discussion reinforces the idea that sustainability communication may symbolically contribute to the institutional visibility and public positioning of productive activities with strong heritage roots.

6. Conclusions

This study shows that sustainability- and CSR-related disclosure among Spanish brewing companies remains limited, confirming that corporate websites are still underused as tools for transparency, accountability and strategic communication. Based on the analysis of 106 firms and 24 indicators, the results reveal a low overall disclosure level (22.46%), which suggests that sustainability does not yet occupy a central place in the sector's digital communication. This scenario is particularly critical for a sector such as brewing, which should be understood not only as an economic activity but also as a cultural and industrial heritage-based productive activity linked to traditions, technical knowledge, consumption patterns and territorial identity. In this sense, limited digital disclosure not only reduces corporate transparency but may also constrain the institutional visibility through which the sector positions itself within sustainability-oriented public narratives as a culturally rooted productive activity. The results also indicate that social information is disclosed more frequently than environmental and economic content, while general information remains the most visible dimension overall. This pattern suggests that many companies have developed a basic digital presence but have not yet translated that presence into a more structured and strategic communication of their responsible commitments.

Accordingly, the study reinforces the idea that digital sustainability disclosure should be understood not only as an exercise in corporate communication, but also as a symbolic mechanism through which heritage-based productive activities may strengthen their institutional visibility within sustainability-oriented governance frameworks. By linking non-financial disclosure with public visibility, social legitimacy and sustainable valorisation, the article contributes to a broader understanding of how corporate communication may symbolically contribute to the public visibility and institutional positioning of heritage-based productive activities embedded in territorial identity.

6.1. Implications for the Territorial Valorisation of Brewing Heritage

The findings suggest that corporate digital communication may play a relevant role in the public visibility of heritage-based productive activities. In the case of the Spanish brewing sector, more robust disclosure of sustainability- and CSR-related information could contribute to strengthening the public visibility and symbolic association between brewing activity, territorial identity and heritage-oriented narratives. From this perspective, better communication of issues such as eco-efficiency, innovation, social commitment and ethical values may contribute to the institutional visibility and symbolic public positioning of the sector as a productive activity embedded in local traditions and cultural meanings. Although the study does not directly measure territorial impacts, the results suggest that responsible communication may contribute to broader public narratives linking sustainability, heritage-oriented identities, and local development. These implications are also relevant for local institutions and territorial governance, as they point to the potential value of encouraging collaboration between firms and local stakeholders in order to improve the visibility of the sector's responsible commitments and the public visibility of its heritage-oriented territorial embeddedness.

6.2. Limitations of the Study

This study has a number of limitations that must be taken into account when interpreting its results. Firstly, the analysis is based exclusively on information disclosed via corporate websites, which means that the results reflect the level of visible communication regarding responsible practices but do not allow for a conclusive assessment of the actual degree to which these practices are implemented internally. In this regard, the absence of

information on the website does not necessarily equate to the absence of responsible actions in business management. Secondly, the research focuses on a single sector of activity—the Spanish brewing industry—which limits the generalisation of the results to other sectoral or geographical contexts. However, this focus also constitutes a strength, insofar as it allows for an in-depth examination of a sector with a marked cultural, industrial and territorial dimension, the study of which is particularly revealing from the perspective of sustainability and productive heritage. Thirdly, the study design is cross-sectional, as it examines the information available over a specific time period. Consequently, it does not allow for an analysis of the evolution of responsible disclosure over time, nor does it enable an observation of whether companies increase, maintain or reduce their levels of sustainability communication as institutional, social or competitive demands change.

Furthermore, the use of a dichotomous scale of presence or absence of indicators facilitates comparability between companies, but does not allow for a detailed assessment of the quality, depth, accuracy or level of development of the disclosed content. Crucially, the empirical design treats the sample aggregates at an industry-wide level without segmenting the 106 firms by structural size or production volume. Given the severe polarisation of the Spanish brewing sector—where a few massive corporate groups concentrate the majority of revenue while dozens of microbreweries represent localised, traditional heritage—the metrics applied do not isolate how resource constraints might leave the most traditional producers digitally invisible. This limitation is particularly relevant in heritage-based productive sectors, where smaller firms may simultaneously embody stronger territorial rootedness while possessing weaker institutional communication infrastructures. Consequently, the findings should be interpreted as indicators of the visibility and extent of digital sustainability disclosure rather than as direct measurements of substantive corporate sustainability performance.

Finally, although the article incorporates an analysis from the perspective of cultural and industrial heritage and territorial identity, the empirical design does not allow for the direct measurement of the effects of disclosure on variables such as residents' perceptions, effective social legitimacy, community roots, or the sector's concrete contribution to local quality of life. These dimensions are suggested from a theoretical and interpretative standpoint, but have not been specifically tested in the research. Accordingly, references to legitimacy, territorial recognition, and heritage visibility throughout the discussion should be interpreted as theoretical and interpretative dimensions rather than as empirically verified stakeholder outcomes.

6.3. Future Lines of Research

Several avenues for future research emerge from these limitations. First, extending the analysis to other heritage-based productive sectors, such as agri-food, wine, or crafts, would allow comparisons of the role of sustainability communication in supporting the public visibility of culturally rooted activities. Second, comparative studies across regions could examine how territorial context, local embeddedness, and heritage narratives shape disclosure practices. Third, content analysis could be complemented with qualitative methods, including interviews, case studies, and discourse analysis, to better understand why firms disclose, or fail to disclose, sustainability- and CSR-related information, and how they integrate territorial and cultural dimensions into their strategies.

Fourth, future investigations should explicitly scale these breweries by firm size or revenue to contrast potential correlations or anti-correlations between production volume and digital disclosure frameworks. Fifth, stakeholder-oriented research could assess whether sustainability communication may shape perceptions of legitimacy, reputation, and recognition among consumers, local communities, institutions, and residents. Sixth, future work should move beyond measuring the mere presence of information to evalu-

ating its quality, depth, and coherence. More broadly, further research should explore how corporate communication connects productive heritage, territorial identity, and processes of territorial valorisation. Future studies could also explore whether an inverse relationship exists between the territorial authenticity of heritage-based productive activities and their digital sustainability disclosure capacity, particularly among small-scale producers with limited communication resources.

Overall, sustainability communication remains a promising field for understanding how heritage-based productive activities may symbolically position themselves within contemporary sustainability-oriented public narratives.

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Appendix A

Appendix A1. Disclosure indices by item and by area of analysis.

GENERAL DIMENSION	IDI
Has a website	70,75
Direct access to information	23,58
Ease of access	67,92
CSR report available	11,32
BLOCK 1 DISCLOSURE INDEX (BDI1)	10,85
SOCIAL DIMENSION	IDI
Social assistance and benefits	14,15
Sponsorship and patronage	16,04
Work–life balance	9,43
Employment of disabled staff	10,38
Continuing professional development	10,38
Equal opportunities	14,15
Respect for human rights	35,85
Health and safety at work	15,09
Customer satisfaction	33,96
BLOCK 2 DISCLOSURE INDEX (BDI2)	4,43
ENVIRONMENTAL DIMENSION	IDI
ISO certification	10,38
Conducting environmental audits	8,49
Innovation projects	22,64
Waste management	17,92

Eco-efficiency programmes	19,81
BLOCK 3 DISCLOSURE INDEX (BDI3)	3,96
ECONOMIC DIMENSION	IDI
Inclusion of mission, values and vision CSR	16,04
Effective brand management	15,09
Compliance with the United Nations Global Compact	12,26
Cost reduction	13,21
Code of ethics and conduct	14,15
Transparency of information	6,60
BLOCK 4 DISCLOSURE INDEX (BDI4)	3,22

Appendix A2. Total disclosure index.

	IDI	M	IDI/M	BDI (%)
BLOCK 1: General information	173,58	4	43,40%	10,85
BLOCK 2: Social information	159,43	9	17,71%	4,43
BLOCK 3: Economic information	79,25	5	15,85%	3,96
BLOCK 4: Environmental information	77,36	6	12,89%	3,22
	24	TDI=	22,46	

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