ASSESSING PUERTO RICAN COMMERCIAL BANKS' CONTRIBUTIONS TO THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

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Abstract

This study delves into the pivotal role of Puerto Rican commercial banks in promoting the United Nations (UN) Sustainable Development Goals (SDGs). Employing a robust four-step methodology adapted from Aguado-Correa et al. (2023), Arena et al. (2023), and Cosma et al. (2020), the research offers a comprehensive approach to addressing the research questions. The methods encompass qualitative analyses through manual content analysis of non-financial disclosures (NFD) and advanced artificial intelligence (AI) processing of sustainability reports. Subsequent quantitative analysis includes calculating a compound index and utilizing a multi-criteria decision-making method. The significance of this research lies in its exploration of an underexamined area: the financial sector's involvement in sustainable development (SD) in Puerto Rico. Moreover, it introduces a novel methodological innovation by integrating AI in the analysis of sustainability reports. The findings reveal the proactive engagement of Puerto Rican commercial banks in SD, evident through dedicated web pages and standalone sustainability reports. Notably, larger banks demonstrate a stronger commitment by focusing on aspects of social sustainability. These findings underscore the potential of the financial sector to drive SD in Puerto Rico, providing valuable insights for policymakers and stakeholders to enhance sustainability practices and reporting in emerging economies.

Keywords: Sustainability, SDGs, Banks, Non-Financial Disclosures, Puerto Rico

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1. INTRODUCTION

The aims of global sustainability have been discussed for some time. In 1992, at the Earth Summit in Brazil, the countries belonging to the United Nations (UN) signed an agreement for sustainable development (SD). These countries unanimously adopted the eight Millennium Development Goals, which were transformed into the 2030 Agenda for Sustainable Development in 2015. At this agenda's core are 17 Sustainable Development Goals (SDGs) that call for a partnership between countries to end poverty, improve health and education, reduce inequality, and spur economic growth. Each SDG has a series of targets (169 in total) that are measured annually to report progress towards the deadline in 2030.

To achieve the SDGs, public and private stakeholders must work together. Governments have the leadership to foster SD. Nonetheless, the UN has called on companies to work to achieve SD. Companies seeking economic growth affect society and the environment through their activities. Therefore, securing SD should be the primary business objective.

According to PricewaterhouseCoopers' survey[1], nearly a third of investors consider climate change to be one of the top threats to the companies they invest in over the next 12 months (PwC, 2024). This is comparable to the proportion of investors identifying inflation, macroeconomic volatility, and technological disruption as significant threats. Additionally, respondents highlighted nine SDGs-related topics out of 18 as critical factors when assessing companies for investment, including climate, human rights, and water and waste management (PwC, 2024).

Despite the importance of literature on how the private sector contributes to the UN SDGs, research is still scarce (Calabrese et al., 2022). Furthermore, the banking sector remains one of the less studied fields in this strand of the literature (Aguado-Correa et al., 2023; Avrampou et al., 2019; Chagas et al., 2022; Cosma et al., 2020) despite its role in promoting and supporting SD and SDGs. From a literature review of 101 papers (from 2015 to 2020) on how organizations engage with SDGs, only three were from the banking sector (Aguado-Correa et al., 2023). Furthermore, after a literature review of 158 studies on sustainability banking, Rajawat and Mahajan (2024) conclude that the role of sustainability reporting in achieving the SDGs is still needed. A more holistic approach to recognizing the comprehensive nature of SDGs is required in this analysis as well.

The limited banking and SDG literature focuses on the European Union (EU). It is almost nonexistent in the context of Puerto Rico, to the best knowledge of the researcher[2]. Therefore, this study aims to contribute to the literature on the financial sector in Puerto Rico and its role in SD. First, it ascertains whether commercial banks in Puerto Rico publicly exhibit any commitment to the 17 UN SDGs. Second, using qualitative and quantitative analysis of non-financial disclosures (NFD), this study identifies the contribution of Puerto Rican commercial banks in achieving the 17 SDGs.

This exploratory research aims to answer the following research questions:

RQ1: Do publicly owned Puerto Rican commercial banks pursue public SD and accomplish SDGs? If so, what is the means to do so?

RQ2: Towards which SDGs are publicly owned Puerto Rican commercial banks' NFD reporting activity oriented?

RQ3: What is the contribution of publicly owned Puerto Rican commercial banks to the SDGs?

The paper follows four procedures to answer the research questions and present a holistic approach to the issue: manual content analysis, artificial intelligence (AI) processing, compound index calculation, and a multi-criteria decision method. These methods are adapted from the previous work of Aguado-Correa et al. (2023), Arena et al. (2023), and Cosma et al. (2020).

The contributions of this study are threefold: First, it sheds light on an unexplored topic by adding sector-specific insights into the financial sector. Second, to the best of the author's knowledge, this research is one of the first to provide country-level insights into how Puerto Rico contributes to advancing SDGs. Finally, this study employs a methodological innovation by applying AI to analyze sustainability reports, contributing to the advancement of such technology in academic research (Conforti et al., 2020).

The results of this study suggest that commercial banks in Puerto Rico publicly pursue SD and the accomplishment of SDGs. The primary vehicles to show their commitment are dedicated web pages and the publication of standalone sustainability reports. The largest institutions seem to allocate more resources to sustainability efforts and disclosures. The orientations of non-financial disclosure in Puerto Rican commercial banks tend to focus on the social elements of SD.

The managerial implications of these results support the idea that banks must make more effort to accomplish the SDGs for themselves and Puerto Rico. The analysis shows the concentration of business tags or themes on SD and SDGs that banks include in their non-financial reports. These results may help institutions diversify or improve the disclosure of SD reporting content.

Furthermore, these results provide evidence that Puerto Rican public policy should continue fostering SD on the Island. Puerto Rico must insert itself into worldwide efforts to achieve the SDGs.

The rest of the paper is structured as follows. Section 2 presents the literature review and hypotheses. Section 3 explains the research methodology. Section 4 provides the results and discussion. Section 5 concludes with the limitations and future research ideas.

2. LITERATURE REVIEW

2.1. Why do companies report on sustainability?

Several theories might answer why companies report on sustainability, most notably agency, signaling, stakeholder, and legitimacy theories (Al Amosh & Khatib, 2022). From the management's perspective, agency theory sustains that disclosures are part of

[1] For 2024, PwC surveyed 345 investors and analysts across 24 countries and territories and conducted in-depth interviews with 14 investment professionals.

[2] SD for Puerto Rico is still nascent. In August 2002, at the World Summit on SD held in Johannesburg, South Africa, the Secretary of State declared that Puerto Rico is in the process of establishing SD as its public policy and also declaring the development of a national system of SD indicators (Soto Lacourt, 2002). However, in June 2024, the Puerto Rican legislature did not approve the Mitigation, Adaptation, and Resilience Plan to Climate Change for Puerto Rico. This action is clear evidence of how SD is not a priority for the government of Puerto Rico.

the contract between shareholders (principals) and managers (agents). Managers get paid for managing companies efficiently and are rewarded for maximizing shareholders' wealth. Managers need to lower asymmetry and other agency costs to perform their duties successfully. Therefore, managers are willing to disclose information, including sustainability matters.

Under the signaling theory, managers disclose sustainability information to communicate good behavior and commitment. These positive signals lower asymmetry costs and improve the company's reputation in the market and for stakeholders (Bae et al., 2018). On the broader side, stakeholder theory provides the grounds for the ideal conditions for the free market assumptions. Not only do companies need to answer to shareholders, but also to a broader group, named stakeholders. Stakeholders' demands for sustainability have increased over time. Therefore, managers would provide sustainability and other disclosures to accommodate stakeholders' needs and heightened transparency.

The legitimacy theory is the most cited theory to explain why companies disclose sustainability matters (see, for example, Calabrese et al., 2022; Chagas et al., 2022; Cosma et al., 2020). The assumption is that companies voluntarily disclose sustainability information to be perceived as responsible and aligned with their society's norms, beliefs, values, and definitions (Rajawat & Mahajan, 2024). Sustainability reporting can mitigate negative societal reactions to bad news (Isiaka, 2022) or behaviors. Moreover, managers implement strategies to demonstrate to society how their entities meet their expectations, including sustainability reporting (Baier et al., 2020). Research has supported the idea that sustainability disclosures are a symbolic attitude influencing society's perception rather than achieving results (Silva, 2021; van der Waal & Thijssens, 2020).

Voluntary sustainability disclosures provide benefits and incentives to companies and enhance their reputation. The benefits include a reduction in the cost of equity capital, improvement in the quality of earnings, decreases in information asymmetry and bid-ask spreads, positive impact on performance, and decreases in analysts' forecast errors (Isiaka, 2022). Despite the cost of providing sustainability information, it delivers growth and competitive advantage (Sicoli et al., 2024).

2.2. Non-financial reporting and SDGs

One way for companies to be accountable for their SD efforts and commitment to SDGs is to publish their actions in non-financial, voluntary reports, such as sustainability reports. NFD help build trust among external stakeholders by responding to their expectations and needs (PwC, 2021). Moreover, Rosati and Faria (2019) identified sustainability reporting as facilitating SDG actions, investments, and strategies. Sustainability reporting is voluntary in many jurisdictions because of the need for internationally recognized reporting standards. The Global Reporting Initiative (GRI) is the most recognized and used sustainability report guideline worldwide. KPMG (2024) reports that 75% of G250 companies[3] use GRI standards in their sustainable NFD. Furthermore, three out of four companies in KPMG's (2024) survey[4] applied the SDGs framework to report their positive and negative impacts on SD.

The GRI defines sustainability reporting as "the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of SD. A sustainability report should provide a balanced and reasonable representation of the sustainability performance of the reporting organization, including both positive and negative contributions" (GRI, 2011, p. 3). Furthermore, the GRI has been identified as a tool for operationalizing SDGs (Diaz-Sarachaga, 2021; Ordonez-Ponce & Khare, 2021). In 2017, GRI published the incorporation of 17 SDGs into its standards, with the cooperation of the UN Global Compact and the World Business Council for Sustainable Development (WBCSD) (GRI et al., 2017).

Evidence shows that larger organizations are more likely to integrate SDGs into their reporting than smaller entities (Elalfy et al., 2021). Moreover, Aguado-Correa et al. (2023) report that Spanish banks with higher capitalization levels contribute more to the SDGs. Therefore, this study proposes the following hypotheses:

H1: There is a positive relationship between banks' size and SD through non-financial disclosure reporting activity. This is,

H1a: As banks' capitalization increases, more SD disclosures will be publicly available.

H1b: As banks' capitalization increases, more SDG contributions will be disclosed in their non-financial reports.

2.3. Sustainability reporting and banks

The financial sector has been called upon to embrace sustainability because of its societal role (Chagas et al., 2022; Corvino et al., 2020; Gallego-Sosa et al., 2021; Saxena et al., 2021). Financial services help improve society by improving the economic well-being of households and the public sector (Avrampou et al., 2019). Specifically, banks play a prominent role in SD, providing capital for innovation and infrastructure and creating jobs and general prosperity (Gallego-Sosa et al., 2021). Furthermore, banks, as credit and financial intermediaries, direct the conduct of individuals and organizations towards activities that embrace ethics, society, and the environment for funding and investment activities (Cosma et al., 2020).

Globally, practices addressing sustainability in the financial sector have been developed and promoted. For instance, the UN has created Principles of Responsible Banking, which 130 banks have followed in 49 countries. In addition, the International Finance Corporation (IFC) promotes a Sustainable Banking Network to facilitate sustainable banking. The Equator Principles provide a risk-management framework for ascertaining, evaluating, and managing the environmental and social risks of project financing in 105 financial institutions. In Brazil, its Central Bank aims to improve banks' socio-environmental risk management mechanisms and expand green credit supply by incorporating environmental, social, and governance (ESG) aspects into its regulation (Chagas et al., 2022). Research has generally shown a positive relationship

[3] The world's 250 largest companies by revenue based on the 2023 Fortune 500 ranking.

[4] Sample size of 5,800 companies worldwide.

between sustainable banking practices and the 17 SDGs (Saxena et al., 2021).

Several authors have explored how banks in different countries endorse SDGs. For instance, in the EU, the works of Avrampou et al. (2019), Zimmermann (2019), and Cosma et al. (2020) can be found. The first group of authors studied five leading European banks and demonstrated a low contribution to the SDGs. Such contributions remain heterogeneous for most SDGs. Zimmermann (2019) reported a similarly low contribution to SDGs within the 26 sampled German banks. Finally, Cosma et al. (2020), using a larger sample of 262 banks across 22 countries, also reported a lack of sustainability reporting on SDGs.

For emerging markets, specific country-related evidence has shown a low contribution of banks towards SDGs, specifically in India (Kumar & Prakash, 2020) and Brazil (Chagas et al., 2022). Both countries have reported low-quality sustainability reporting and SDGs. Moreover, Gallagher and Yuan (2017) concluded that international development banks, especially in Latin America, lack appropriate infrastructure projects to meet the SDGs. Therefore,

H2: The contribution of Puerto Rican commercial banks to the SDGs is insignificant.

Research on specific SDG banks is also emerging. In India, banks in the public sector tend to follow social dimensions, whereas those in the private sector follow more environmentally driven factors (Kumar & Prakash, 2020). Avrampou et al. (2019) reported that European banks concentrate their activities on social dimensions. Given this background, this study proposes the following:

H3: There is no specific orientation towards any SDG from Puerto Rican commercial banks' non-financial disclosure reporting activity.

2.4. Puerto Rican banking context

The USA invaded Puerto Rico in 1898. Since then, it has been an unincorporated territory with self-government under the grant authority of the US Congress. Puerto Rico is the richest island among the largest economies in the Caribbean but the poorest compared to the 50 states of the USA. The first Puerto Rican banks and financial institutions were under the Spanish dominion (back in 1493).

Puerto Rican financial institutions are locally regulated by the Office of the Commissioner of Financial Institutions[5] (*Oficina del Comisionado de Instituciones Financieras*, OCIF) and supervised by the USA's Federal Deposit Insurance Corporation (FDIC). Public entities are supervised also by the USA's Securities and Exchange Commission (SEC). Research has evidenced increased concentration levels in the financial industry since 1994, which can be classified as moderately concentrated (Morales Hernandez, 2023).

The financial position of Puerto Rican banks has been shaky since the local recession of 2006. The dire position of banks in Puerto Rico was not directly a consequence of the subprime crisis but a combination of administrative and operational deficiencies along with the losses of valuation and accounting of complicated derivatives contracts and loan sales for 2005 (Cortés-Pérez, 2024).

By 2010, all local banks had received federal support, the FDIC had taken three, and two received injections from the federal Troubled Asset Relief Program (Setser & Marxuach, 2020). On April 3, 2010, after five years of crisis, OCIF closed three banks, appointing the FDIC as trustee. At that time, the closing banks represented 21.18% of the banking system's total assets and one-third of the PR's second most important sector of the economy. The FDIC auctioned and consolidated them into stronger institutions, resulting in a combined loss of $5,237 million. This transaction represented the most geographical failure since the collapse of the savings and loans of the '90s in the USA and decreased the number of commercial banks from seven to four on the island (Cortés-Pérez, 2024). Currently, the commercial depositary financial landscape is dominated by only three local institutions.

3. RESEARCH METHODOLOGY

3.1. Sample

According to the OCIF (n.d.), in Puerto Rico there are seven institutions licensed to operate as commercial banks[6]: Banco Cooperativo, Banco de Desarrollo Económico para Puerto Rico, Banesco USA, Citibank, Banco Popular de Puerto Rico (BPOP), First Bank de Puerto Rico (FBP), and Oriental Bank (OFG). Of these, the latter three constitute the sample for this study. These three banks were selected because they are Puerto Rican institutions and publicly owned entities[7].

Table 1. Profile of selected Puerto Rican commercial banks

Banks	*BPOP*	*FBP*	*OFG*
Total assets, 2023	$71.2 B	$18.9 B	$11.3 B
Net income, 2023	$541.3 M	$302.9 M	$181.9 M
Number of employees	9,088	3,168	2,248
Exchange	NASDAQ	NYSE	NYSE

As shown in Table 1, the sample includes two banks trading securities on the New York Stock Exchange (NYSE): FBP and OFG. BPOP trades shares in the National Association of Securities Dealers Automated Quotations (NASDAQ). In this study, banks need to be publicly owned entities. Public companies that regularly trade shares in established markets are regulated and must comply with specific reporting requirements (although sustainability reporting is still voluntary on both exchanges)[8]. Thus, the non-financial data needed to complete the study were guaranteed[9].

Even though the three banks trade their shares in organized markets, they differ significantly in size as measured by total assets, net income, and total number of employees for the year ending 2023[10]. The size ranking of banks, from largest to smallest, is BPOP, FBP, and OFG. BPOP is by far the largest entity with more than double the assets, net income,

[5] https://www.ocif.pr.gov/

[6] The latest report is dated March 2022.

[7] The first two organizations are non-depositary governmental institutions. Banesco USA and Citibank are not Puerto Rican entities.

[8] NYSE and its parent company (Intercontinental Exchange — ICE) explicitly support the idea that public companies should communicate their sustainability efforts to stakeholders. Furthermore, it believes registrants share their information on ESG indicators tied to entities' business strategies.

[9] As explained later, all the banks have published some type of sustainability report. Part of the analyses included the NFD on the required annual report (10K).

[10] Data drawn from 2023 10Ks of each bank.

and employees of FBP. Furthermore, OFG is the smallest institution, as it has one-fourth of the employees, one-third of the net income, and 16% of the total assets of the BPOP. Furthermore, OFG accounts for 60% of FBP's total assets and net income. These figures might indicate that OFG would provide less support for the SD of Puerto Rico and the attainment of SDGs as owners of fewer resources.

3.2. Methodology

Previous research has used various methods to assess the integration of SDGs and disclosures. Evangelinos et al. (2009) grouped the methods into content analysis, surveys, and scores. Most of the studies have used some type of content analysis of sustainability reports and other non-financial disclosure on annual reports and corporate websites (Aguado-Correa et al., 2023; Arena et al., 2023; Calabrese et al., 2022; Cosma et al., 2020; Sicoli et al., 2024). To complete the content analysis, researchers have manually gathered the data due to the lack of a uniform conceptualization of sustainability. Some recent papers, like this one, have employed AI to accelerate the data collection process.

In addition to the content analysis, some researchers have employed some type of scoring system to determine the contribution of SDGs in specific scenarios, such as Abdel-Meguid et al. (2021) in Egypt, Avrampou et al. (2019), Elmassri et al. (2022) in the UAE, and Chagas et al. (2022) in Brazil.

This research provides an exploratory assessment of the relationship between the Puerto Rico commercial banking sector and the achievement of SDGs through non-financial reports. This research uses qualitative and quantitative methods to provide a holistic perspective on the current issue. Therefore, four procedures were applied to answer the three research questions: manual content analysis, AI processing, compound index calculation, and the multi-criteria decision method. The multiple approach of analysis was made to accomplish a holistic assessment of the sample.

The first procedure was to determine whether Puerto Rican commercial banks publicly pursued SD and accomplished the SDGs. A three-step qualitative search was conducted through manual content analysis. The main subject of the analysis was NFD on the corporate websites of the selected banks. Although software exists for content analysis (such as in vivo), this study did not use it because of the lack of a universally accepted sustainability taxonomy. Furthermore, this type of commercial software does not identify or process many concepts or information related to the 17 SDGs.

Data was collected by a research assistant to avoid inter-coder reliability bias (Krippendorff, 2018). To maximize the reliability of data collection, the research assistant was thoroughly trained in the primary topics of sustainability and SDGs. Additionally, clear indications were provided to the research assistant to complete the methodology. The principal investigator was readily available during the data-gathering process if the research assistant had any questions. Furthermore, as a last step, the principal investigator, as an expert on the topic, re-evaluated the research assistant's work to validate the process and the compiled data.

The first step was to assess the banks' public pursuit of SD using a worksheet. The worksheet was a checklist to ascertain whether the bank complied (YES) or not (NO) with sustainability aspects. These elements of the worksheet, the result of the extensive literature review, and the expertise of the principal investigator on SDGs were as follows:

1) The existence of a dedicated website for sustainability issues;

2) Availability of sustainability report(s) in terms of its:

- Format (standalone or combined),
- Name,
- Number of years, and
- Language,

3) The existence of a chief sustainability officer (CSO);

4) Inclusion of a sustainability message;

5) Explicit reference to:

- SDGs,
- GRI, Sustainability Accounting Standards Board (SASB), or any other sustainability reporting framework,
- Sustainability code/policy.

Further analysis was performed. The coder assessed whether the explicit references were qualitative or quantitative.

The second step of the manual content analysis was identifying the discussion of sustainability pillars (Planet, Society/People, Governance) on banks' corporate websites, following the definitions of Saxena et al. (2021). The rating scale was 0 — if the element was not mentioned, 1 — for a qualitative discussion of the element, and 2 — for both qualitative and quantitative discussions of each element. Previous research has gone deeper into rating these pillars using a more complicated scoring system. For example, Cosma et al. (2020) used a five-point scoring system, and Avrampoury et al. (2019) and Calabrese et al. (2022) used a four-point scale. We followed Arena et al. (2023) to facilitate coding with this more intuitive rating scale of three possible points.

The third step was analyzing formal non-financial sustainability disclosures on banks' websites. At the data collection date, the most current relevant available reports for the three banks were for the fiscal year ending in 2022 (standalone sustainability reports and 10Ks). The purpose was to identify whether there was an explicit mention of sustainability stakeholders in relation to sustainability and SDGs. This analysis serves as a proxy for the engagement of the institutions with the stakeholders and includes four areas: Chief executive officer's (CEO) letters, ESG strategy, risk analysis, and management discussion and analysis (MD&A). The sustainability report was the main objective of this analysis. A second analysis was conducted on the 10-K report, specifically on items 1A (risk factors) and 7 (MD&A). Concerning the referenced stakeholders, the following were considered: clients (customers), suppliers, employees, other financial institutions (competitors), shareholders, other institutions (small and medium-sized enterprises [SMEs] and charity organizations), communities (society), and the environment.

The second procedure was to determine the explicit contribution towards the 17 SDGs in the sustainability report using AI, specifically natural language processing (NLP). This branch of AI enables computers to mine and manipulate relevant

information from the processed texts. Furthermore, it allows us to understand and interpret human language in terms of word patterns.

Scanner 2030 was used to identify the mentions of each of the 17 SDGs, their goals, and their tags of interest in the banks' non-financial reports. Scanner 2030 is an open-access software package developed by Political Watch (an independent organization of the Foundation Salvador Soler in collaboration with the Secretary of State for International Cooperation of the Ministry of Foreign Affairs, the EU, and the Government of Spain, and Actua Innovacio). It can be used in various text content formats (.pdf, .txt, .doc., docx., .xls, .jpg, among others), and languages (English and Spanish). The tool incorporates the 2030 Agenda and 17 SDGs (including 169 targets) with over 4,000 tags in its taxonomy. The text mass labeling system was applied to each of the 2022 sustainability reports of the banks.

The creators of Scanner 2030 developed the taxonomy after a rigorous consultation process with experts and documents on sustainability. This taxonomy covers a broad set of language patterns represented through regular expressions because the program recognizes texts from entities and complex concepts of sustainability.

The results from Scanner 2030 are shown in a structured format on a Microsoft Excel spreadsheet of all SDGs and targets mentioned in the text, as well as a series of interactive web visualizations. The researcher combined the output of three spreadsheets into one to determine the SDG orientation of Puerto Rican commercial banks' NFD reporting activity.

In the third procedure, a compound index for each bank that captures the implicit aspects of its contribution to the SDGs was calculated. This index allows each bank's overall degree of orientation towards SDGs to be synthesized. Furthermore, the sum of different items used to calculate each score limits the unreliability risk owing to the complexity of the topic. Finally, the index allowed the ranking and comparison of institutions.

The following information was considered to construct the index: number of reported SDGs, level of detail provided by SD disclosures, SD elements towards SDGs, and referenced stakeholders. We calculate the index for each bank as the product of:

$$Index = SDGs * SD\ reporting\ detail * SD\ elements * Stakeholders * 100 \quad (1)$$

$$Index_i = \sum_{j=17}^{17} \frac{SDGs_j}{17} * \beta * \sum_{z=1}^{9} \frac{ELEMENTS_z}{9} * \sum_{k=1}^{8} \frac{STAKEHOLDERS_k}{8} * 100 \quad (2)$$

$$i = 1 \ldots 3;\ \beta \in [0.5; 1]$$

$Index_i$ is a proxy for the extent to which each bank contributes to the attainment of the 17 SDGs. The higher the index, the more banks contribute to the specific SDGs. It can range from a minimum of 0.04 to a maximum of 100[11]. A bank with a higher number of reported goals, detailed SD reporting, a higher number of SD elements, and a higher number of stakeholders would be more committed to attaining SD for PR. Consequently, it contributed more to the achievement of the 17 SDGs.

$\sum_{j=17}^{17} \frac{SDGs_j}{17}$ is a number of reported SDGs, indicates the total number of SDGs each bank reports, with $j = 1, \ldots, 17$. The variables ranged from 1/17 to 1. It is assumed that each bank mentioned at least one SDG as the minimum; otherwise, the index would be equal to 0. The data for this term came from the analysis of Scanner 2030. As economic actors in society, banks help countries (subscribers of the 2030 Agenda) achieve the 17 SDGs.

$\beta \epsilon [0.5; 1]$ is SD reporting detail, the rating assigned to the details of SD reporting on the banks' websites. This term is a proxy for the sustainability elements of the economy, society, and environment that each bank has adopted to achieve SD in the PR. The value can range from 0.5 if the discussion is deemed generic to 1 if the reporting is detailed (either qualitative or quantitative). The index does not assign a rate of 0 to avoid obtaining an index of 0. To assign a rate to this term, a discussion on the sustainability pillars of the worksheet was used. This term is a proxy for bank commitment and SD.

$\sum_{z=1}^{9} \frac{ELEMENTS_z}{9}$ is SD elements that indicate the total number of elements each bank has included in their web pages. The values ranged from 1/9 to 1. To assign a number to this term, the nine areas of the worksheet of manual content analysis were used, as explained previously. This term is a proxy for the degree of integration of information concerning SD and the attention paid to the SDGs.

$\sum_{k=1}^{8} \frac{STAKEHOLDERS_k}{8}$ is stakeholders that indicates the total number of SD stakeholders each bank mentioned. This can range from 1/8 to 1. As previously explained, eight stakeholders were considered when calculating this term. This term is a proxy for the level of attention paid to stakeholders' demands.

Finally, a fourth procedure of multi-criteria decision methodology, the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), was employed to determine the contribution of Puerto Rican public-owned commercial banks to SDGs. This approach has been used previously in the banking sector to measure sustainability. It assigns a performance score from 0 to 1, which allows banks to rank their contributions to the SDGs.

The steps to compute the performance score were as follows:

1) The construction of the decision matrix is presented in Table 2. Each of the three commercial banks (alternatives; A_i, $i = 1, 2, 3$) was evaluated in relation to each of the 17 SDGs (criteria; C_j, $j = 1, 2, \ldots, 17$) to represent each element, X_{ij}, or the number of tags from Scanner 2030 of interest of the commercial bank, Ai, associated with each SDG, C_j, for which the related weight was w_j.

In this study, we meticulously established the weights of these two sets. First, weights were calculated for each SDG. This is the coefficient between the number of tags found in the three banks for each SDG and the number of tags found for all SDGs. The second set was calculated according to Aguado-Correa et al. (2023).

[11] For computational purposes, each index's components cannot be 0. Therefore, a minimum score not equal to 0 is considered for each of the four components.

Table 2. Decision matrix

	w_1	w_2	w_{17}
	C_1	C_2	C_{17}
A_1	$X_{1\,1}$	$X_{1\,2}$	$X_{1\,17}$
A_2	$X_{2\,1}$	$X_{2\,2}$	$X_{2\,17}$
A_3	$X_{3\,1}$	$X_{3\,2}$	$X_{3\,17}$

2) Normalization of the decision matrix. The following expression was applied to normalize each element:

$$N_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}, i = 1,2,3; j = 1, \dots, 17 \quad (3)$$

3) Construction of the normalized weight decision matrix. V represents each normalized weighted element resulting from:

$$V_{ij} = w_j N_{ij}, i = 1,2,3; j = 1, \dots, 17 \quad (4)$$

4) Computation of the best (A^+) and worst (A^-) solutions using the following expressions:

$$A^+ = \{V_1^+, V_2^+, \dots, V_{17}^+\} = \{(max\, V_{ij}, j = 1, \dots 17)\} \quad (5a)$$

$$A^- = \{V_1^-, V_2^-, \dots, V_{17}^-\} = \{(min\, V_{ij}, j = 1, \dots 17)\} \quad (5b)$$

5) Calculation of the distance measurements:

$$d_i^+ = \sqrt{\sum_{j=1}^{17} (V_{ij} - V_j^+)^2}, i = 1,2,3 \quad (6a)$$

$$d_i^- = \sqrt{\sum_{j=1}^{17} (V_{ij} - V_j^-)^2}, i = 1,2,3 \quad (6b)$$

6) Calculation of the closeness coefficient, R_i, for each bank. R_i $(0 \le R_i \ge 1)$.

$$R_i = \frac{d_i^-}{d_i^- + d_i^+}, i = 1,2,3 \quad (7)$$

The R_i calculation serves as a tool for ranking banks relatively unbiasedly. A value closer to 1 indicates a higher proximity to the ideal and a greater priority for the fulfillment of the 17 SDGs.

4. RESULTS

The analysis of the relationship between Puerto Rican public-owned commercial banks and the achievement of SDGs is grouped into three sections: 1) sustainability practices, 2) SDGs and banks' non-financial reporting, and 3) banks' contributions to SDGs.

4.1. Sustainability practices of Puerto Rican public-owned commercial banks

Table 3 presents a comprehensive overview of the content analysis of Puerto Rican public-owned commercial banks' web pages, offering a detailed picture of their sustainability practices.

Table 3. Qualitative assessment of banks' webpages

Banks	***BPOP***	***FBP***	***OFG***
Dedicated sustainability website	√	√	√
Availability of sustainability report	Standalone	Standalone	Standalone
Name of the sustainability report	Corporate Sustainability Report 2022	Corporate Sustainability Report 2022	Corporate Social Responsibility 2023 — Annual Report
Number of years available	1	2	1
Language of the report	English	English	English
Independent verification of sustainability report	No	No	No
Chief sustainability officer (CSO)	No	√	No
Sustainability message	√	√	No
Explicit mention of SDGs	No	Quantitative	No
Explicit mention of any sustainability framework	Quantitative	Quantitative	No
Explicit mention of sustainability code/policy	Qualitative	Quantitative	No

Source: Author's elaboration.

The three banks have dedicated websites for sustainability issues and publish standalone sustainability reports in English. These results support the notion that, as public entities, banks disclose more information than non-public entities usually present. Moreover, as this information is reported in English, it tends to indicate that its purpose is to attract investors outside the island because the primary language of Puerto Rico is not English. Local stakeholders may not have understood what has been reported. Furthermore, none of the institutions provided an independent verification of the sustainability information in the reports. Although such verification is voluntary, it may help institutions communicate a stronger message that they follow sustainable practices.

One hundred percent (100%) of the sample published a standalone sustainability report, making Puerto Rico different from other geographical areas. For instance, Aguado-Correa et al. (2023) reported that 75% of Spanish banks reported on standalone reports and 58% of firms listed on Latin American exchanges. Ultimately, these results might also support the legitimacy theory that NFD within a non-regulated setting are intended to gain, maintain, and repair reputations (Chagas et al., 2022; Cosma et al., 2020).

The results reveal that BPOP and FBP include a sustainability message and explicitly mention at least one sustainability framework and sustainability code or policy. Discussions on the frameworks were presented quantitatively for both institutions. FBP presents the highest number of reports on its website, is the only institution with a CSO[12], and explicitly discusses SDGs quantitatively. The information in OFG is minimal and centered on social activities performed by employees as volunteers.

[12] A specific individual is not identified as the CSO in FBP. Instead, a board of directors committee is responsible for sustainability duties.

Table 4. Qualitative assessment of sustainability pillars on banks' webpages

Banks	*BPPR*	*FB*	*ORIENTAL*
Planet	2	2	1
People	2	2	1
Governance	2	2	1

Note: 0 — not included; 1 — qualitative discussion; 3 — quantitative discussion.
Source: Author's elaboration.

Table 4 reports on how the institutions discuss the three sustainability pillars on their corporate web pages. Although the three banks discuss planet, people, and governance, OFG does it only qualitatively (67% of the sample). This result is higher than the PwC's (2019) study, in which only 20% of their sampled companies (1,141 companies from 31 countries) report quantitative measures for SDGs—a decrease of eight percent compared with the PwC's (2017) report.

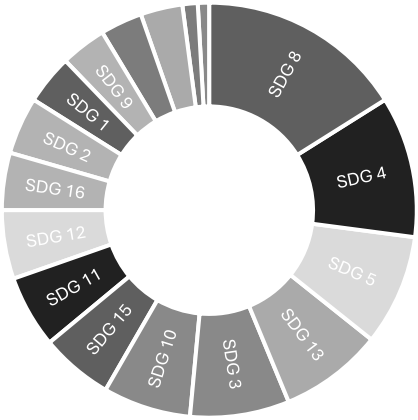
Based on these qualitative assessments, it can be concluded that FBP is the institution pursuing more public SD and accomplishing SDGs in Puerto Rico. This commercial bank uses its webpage, a standalone report, and NFD on its 10K to fully disclose its sustainability efforts. As expected, the OFG, as a smaller institution, pursues public SD in a less detailed manner. Nevertheless, it is interesting to note that by 2023, OFG has increased the information on its website, including its compliance with the SASB. These results provide positive support for *H1a*; thus, in Puerto Rico, as the capitalization of commercial banks increases, public SD disclosures also increase.

4.2. SDGs and banks' non-financial reporting

Figures 1 and 2 present the results of AI procedures applied to the sustainability reports of the three banks. Figure 1 presents the overall contributions of the three banks to the SDGs. According to this figure, commercial banks in Puerto Rico reported SDG 8 (decent work and economic growth) the most, followed by SDG 4 (quality of education). Then, SDG 5 (gender equality), SDG 13 (climate action), SDG 10 (reduced inequalities), and SDG 11 (sustainable cities). The last reported goals were SDG 17 (partnerships for the goals) and SDG 14 (life below water). On average, commercial banks reported 13.3 of the 17 SDGs in Puerto Rico. These results are consistent with previous research on European banks where SDG 8 and 4 were the top goals.

According to PwC (2017), corporations align their SDG priorities with their existing business strategies. As for financial institutions, SDG 8 and SDG 4 are among the top. The Puerto Rican reality, a massive migration after Hurricane Maria, tends to validate these results. There is a limited availability of well-trained employees who are willing to work. Therefore, banks make an effort to retain their employees. Given the limited and trained pool of candidates, banks must promote and support an environment to ensure an inclusive and equitable quality of education (SDG 4) for future generations in Puerto Rico.

Figure 1. Overall SDGs contribution of banks

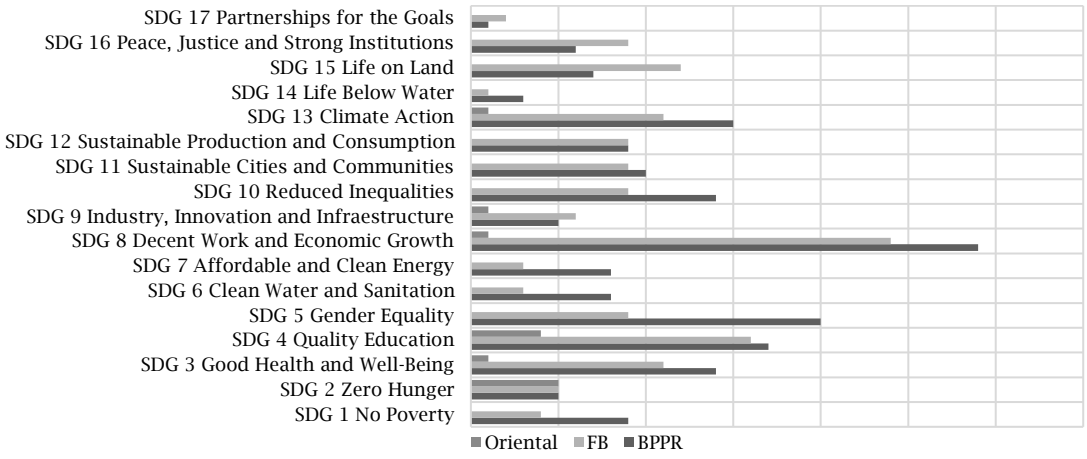


Source: Author's elaboration.

4.3. Banks' contribution to SDGs

Figure 2 shows the contribution of SDGs by individual banks. This chart presents the same distribution of frequencies of SDGs as in Figure 1. However, OFG supports only six of the 17 SDGs. Its contribution pales compared with the other two institutions that reported on the 17 SDGs. The OFG focuses on SDG 2 and SDG 4. These results provide positive support for *H1b*: as the capitalization of commercial banks in Puerto Rico increases, more contributions to SDGs are disclosed in their non-financial reporting.

Figure 2. SDG contribution per bank



Source: Author's elaboration.

Further results of applying AI to the banks' sustainability reports produced a list of tags or themes related to each SDG (336 tags in total). The maximum number of tags (54) was assigned to SDG 8. Table 5 presents the total number of tags related to each SDG per bank. A more significant number of tags were presented by BPOP (180), followed by FBP (143). The OFG sustainability report produces only 13 tags. All three institutions presented the same number of tags (five) for SDG 2 (zero hunger). For OFG, this was the tag with the highest frequency. Contributing to this SDG is easy through employees' voluntarism.

Table 5. Number of tags related to the SDGs per bank

SDGs	*BPOP*	*FBP*	*OFG*	*Total*
SDG 1. No Poverty	9	4	--	13
SDG 2. Zero Hunger	5	5	5	15
SDG 3. Good Health and Well-Being	14	11	1	26
SDG 4. Quality Education	17	16	4	37
SDG 5. Gender Equality	20	9	--	29
SDG 6. Clean Water and Sanitation	8	3	--	11
SDG 7. Affordable and Clean Energy	8	3	--	11
SDG 8. Decent Work and Economic Growth	29	24	1	54
SDG 9. Industry, Innovation and Infrastructure	5	6	1	12
SDG 10. Reduced Inequalities	14	9		23
SDG 11. Sustainable Cities and Communities	10	9		19
SDG 12. Sustainable Production and Consumption	9	9		18
SDG 13. Climate Action	15	11	1	27
SDG 14. Life Below Water	3	1		4
SDG 15. Life on Land	7	12		19
SDG 16. Peace, Justice and Strong Institutions	6	9		15
SDG 17. Partnerships for the Goals	1	2		3
Total	180	143	13	336

Table 6 summarizes the top three tags for the two largest institutions. Mitigation of climate change was among the top three tags for both banks. It is interesting to note that environmental dimensions are usually less related to banks. However, the reality of operating on an island that was recently devastated by a hurricane might be of higher interest to Puerto Rican banks than other jurisdictions. Nevertheless, these results are consistent with those reported by Aguado-Correa et al. (2023).

Table 6. Top three tags per bank

	Tag 1	*Tag 2*	*Tag 3*
BPOP	Mitigation of climate change	Organized crime	Wetlands
FBP	Corruption	Mitigation of climate change	Resource efficiency

Table 7 ranks the banks based on the computation of the index (procedure three).

Table 7. Ranking of banks based on the qualitative index

Entity	*Ranking*	*Qualitative index*
BPOP	2	55.56
FBP	1	66.67
OFG	3	3.92

The index placed FBP in the first position (66.7%), followed by BPOP (55.56%). The OFG index was 3.92%. The index seems low for the three institutions, especially OFG, indicating a low overall contribution to SD and SGD. The reputation of not being sustainable might comprise the image of commercial banks in PR. These institutions should try to become more sustainable to avoid decreasing stakeholder deposits. The more unsustainable an organization is perceived, the greater its risks (Galletta & Mazzù, 2022). These results positively support *H2*. In PR, the contribution of commercial banks to SDGs is minimal, especially for institutions with low capitalization.

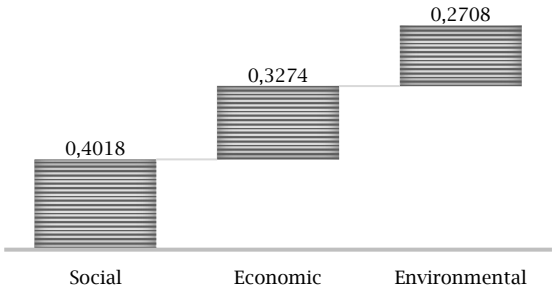
Table 8. Ranking of banks based on their closeness coefficient

	Author's results		*Comparative results (Aguado-Correa et al., 2023)*	
Entity	*Ranking*	*Closeness coefficient*	*Ranking*	*Closeness coefficient*
BPOP	1	0.997	1	1.00
FBP	2	0.903	2	0.90
OFG	3	0	3	0

Table 8 ranks the banks based on their closeness coefficients. The coefficient measures how closely each bank's sustainability practices align with the ideal solution. It ranks banks by how they disclose SDGs in their non-financial reports. Table 8 includes the closeness coefficient calculated for this study and the comparative results obtained using Aguado-Correa et al. (2023). Using this methodology, BPOP ranked first, FBP ranked second, and OFG ranked last.

Finally, the overall weight for each SD dimension was calculated using the normalized weighted decision matrix, as shown in Table 3. The social dimension considers SDG 1 through SDG 5, and SDG 16. The environmental dimension comprises SDGs 6, 7, 11, 13, 14, and 15. Finally, the economic dimension uses the SDGs 8, 9, 10, 12, and 17. Figure 3 shows that the social dimension is the most pursued by Puerto Rican commercial banks, followed by economic and environmental dimensions. These results do not support *H3*. In Puerto Rico, there is a specific orientation towards social SDGs among commercial banks.

Figure 3. Sustainability dimensions for the banks



5. CONCLUSION

This study evaluates the commitment of publicly owned Puerto Rican commercial banks to the 17 UN SDGs and identifies their contributions through NFD. The findings suggest that public, commercial banks in Puerto Rico publicly pursue SD and the accomplishment of SDGs primarily through dedicated web pages and standalone sustainability reports. The largest institutions seem to allocate more resources to sustainability efforts and their disclosures, focusing on the social elements of SD.

The theoretical implications of this study contribute to the existing literature by providing sector-specific insights into the financial sector's role in SD, particularly in understudied regions, such as PR. These findings suggest that larger banks could serve as models for smaller institutions' sustainability efforts. Policymakers could also use these insights to encourage more comprehensive sustainability reporting across the banking sector. The results also highlight the need for the government to support the SDGs on the Island and within businesses.

However, this study has some limitations. It focuses on a small number of banks and uses self-reported data over a single year. Additionally, innovative AI techniques may not ensure complete reliability and correctness. Therefore, the generalizability of the findings outside the Puerto Rico and publicly owned commercial banking industries cannot be assumed.

Future research could explore the evolution of sustainability practices in Puerto Rican banks over a more extended period, or compare these practices with those in other regions, such as states with high concentrations of Puerto Ricans. Such studies could provide a more comprehensive understanding of the banking sector's role in SD and offer further insights into the best practices for sustainability reporting. Moreover, surveys can be conducted among banks' managers to better understand their commitment or lack of SDGs. Primary data gathered through surveys, interviews, and field operations can improve research findings in the banking sector (Rajawat & Mahajan, 2024).

Overall, this study provides valuable insights into the role of publicly owned Puerto Rican commercial banks in advancing UN SDGs. This highlights the need for continued efforts and greater transparency in sustainability reporting to ensure that the financial sector contributes effectively to SDGs.

REFERENCES

Abdel-Meguid, A. M., Dahawy, K., & Shehata, N. (2021). Do Egyptian listed companies support SDGs? Evidence from UNCTAD guidance on core indicators disclosures. *Corporate Governance and Sustainability Review, 5*(2), 73–81. https://doi.org/10.22495/cgsrv5i2p6

Aguado-Correa, F., de la Vega-Jiménez, J. J., López-Jiménez, J. M., Padilla-Garrido, N., & Rabadán-Martín, I. (2023). Evaluation of non-financial information and its contribution to advancing the sustainable development goals within the Spanish banking sector. *European Research on Management and Business Economics, 29*(1), Article 100211. https://doi.org/10.1016/j.iedeen.2022.100211

Al Amosh, H., & Khatib, S. F. A. (2022). Theories of corporate disclosure: A literature review. *Corporate Governance and Sustainability Review, 6*(1), 46–59. https://doi.org/10.22495/cgsrv6i1p5

Arena, M., Azzone, G., Ratti, S., Urbano, V. M., & Vecchio, G. (2023). Sustainable development Goals and corporate reporting: An empirical investigation of the oil and gas industry. *Sustainable Development, 31*(1), 12–25. https://doi.org/10.1002/sd.2369

Avrampou, A., Skouloudis, A., Iliopoulus, G., & Khan, N. (2019). Advancing the sustainable development goals: Evidence from leading European Banks. *Sustainable Development, 27*(4), 743–757. https://doi.org/10.1002/sd.1938

Bae, S. M., Masud, M. A. K., & Kim, J. D. (2018). A cross-country investigation of corporate governance and corporate sustainability disclosure: A signaling theory perspective. *Sustainability, 10*(8), Article 2611. https://doi.org/10.3390/su10082611

Baier, P., Berninger, M., & Kiesel, F. (2020). Environmental, social and governance reporting in annual reports: A textual analysis. *Financial Markets, Institutions, & Instruments, 29*(3), 93–118. https://doi.org/10.1111/fmii.12132

Calabrese, A., Costa, R., Levialdi Ghiron, N., Tiburzi, L., & Villazon Montalvan, R. A. (2022). Is the private sector becoming cleaner? Assessing the firms' contribution to the 2030 Agenda. *Journal of Cleaner Production, 363*, Article 132324. https://doi.org/10.1016/j.jclepro.2022.132324

Chagas, E. J. M., de Lima Albuquerque, J., Maia Filho, L. F. A., & Ceolin, A. C. (2022). Sustainable development, disclosure to stakeholders and the Sustainable Development Goals: Evidence from Brazilian banks' non-financial reports. *Sustainable Development, 30*(6), 1975–1986. https://doi.org/10.1002/sd.2363

Conforti, C., Hirmer, S., Morgan, D., Basaldella, M., & Or, Y. B. (2020). Natural language processing for achieving sustainable development: The case of neural labelling to enhance community profiling. In B. Webber, T. Cohn, Y. He, & Y. Liu (Eds.), *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)* (pp. 8427–8444). Association for Computational Linguistics. https://doi.org/10.18653/v1/2020.emnlp-main.677

Cortés-Pérez, E. (2024). An analysis of Puerto Rico's bank failures through an event study. In *Proceedings of the 2024 Academy of Latin American Business and Sustainability Studies (ALBUS)* (pp. 74–83). https://zenodo.org/records/13996140/files/An%20analysis%20of%20Puerto%20Rico%E2%80%99s%20bank%20failures%20through%20an%20event%20study.pdf?download=1

Corvino, A., Doni, F., & Martini, S. B. (2020). Corporate governance, integrated reporting and environmental disclosure: Evidence from the South African context. *Sustainability, 12*(12), Article 4820. https://doi.org/10.3390/su12124820

Cosma, S., Venturelli, A., Schwizer, P., & Boscia, V. (2020). Sustainable development and European banks: A non-financial disclosure analysis. *Sustainability, 12*(15), 6146–6165. https://doi.org/10.3390/su12156146

Diaz-Sarachaga, J. M. (2021). Shortcomings in reporting contributions towards the sustainable development goals. *Corporate Social Responsibility and Environmental Management, 28*(4), 1299–1312. https://doi.org/10.1002/csr.2129

Elalfy, A., Weber, O., & Geobey, S. (2021). The Sustainable Development Goals (SDGs): A rising tide lifts all boats? Global reporting implications in a post SDGs world. *Journal of Applied Accounting Research, 22*(3), 557–575. https://doi.org/10.1108/JAAR-06-2020-0116

Elmassri, M., Yusuf, A., Allah, A. K., Al Shamsi, M., Kaniyamparambil, R., & Al Ahbabi, S. M. (2022). The quality of corporate reporting: The United Nations sustainable development goals. *Corporate Ownership & Control, 19*(3), 158–167. https://doi.org/10.22495/cocv19i3art12

Evangelinos, K., Skouloudis, A., Nikolaou, I., & Filho, W. L. (2009). An analysis of corporate social responsibility (CSR) and sustainability reporting assessment in the Greek banking sector. In S. Idowu & W. Leal Filho (Eds.), *Professionals' perspectives of corporate social responsibility* (pp. 157–173). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-02630-0_9

Gallagher, K. P., & Yuan, F. (2017). Standardizing sustainable development: A comparison of development banks in the Americas. *The Journal of Environment & Development, 26*(3), 243–271. https://doi.org/10.1177/1070496517720711

Gallego-Sosa, C., Gutiérrez-Fernández, M., Fernández-Torres, Y., & Nevado-Gil, M. T. (2021). Corporate social responsibility in the European banking sector: Commitment to the 2030 Agenda and its relationship with gender diversity. *Sustainability, 13*(4), 1731–1754. https://doi.org/10.3390/su13041731

Galletta, S., & Mazzù, S. (2022). ESG controversies and bank risk taking. *Business Strategy and the Environment, 32*(1), 274–288. https://doi.org/10.1002/bse.3129

Global Reporting Initiative (GRI), the United Nations Global Compact, & the World Business Council for Sustainable Development (WBCSD). (2015). *SDG compass: The guide for business action on the SDGs.* https://sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf

Global Reporting Initiative (GRI). (2011). *Sustainability reporting guidelines.* https://www.interlycees.lu/site/wp-content/uploads/2010/01/GRI-G31-Guidelines-2011.pdf

Isiaka, A. S. (2022). Voluntary sustainability reporting and financial performance: Evidence from Global Reporting Initiative disclosures in the developing economy. *Corporate Governance and Sustainability Review, 6*(4), 54–64. https://doi.org/10.22495/cgsrv6i4p5

KPMG. (2024). *The move to mandatory reporting: Survey of sustainability reporting 2024.* https://kpmg.com/xx/en/our-insights/esg/the-move-to-mandatory-reporting.html#accordion-57530f0dfc-item-bbe177d2c0

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.). SAGE Publications.

Kumar, K., & Prakash, A. (2020). Managing sustainability in banking: Extent of sustainable banking adaptations of banking sector in India. *Environment, Development and Sustainability, 22*, 5199–5217. https://doi.org/10.1007/s10668-019-00421-5

Mazumder, M. M. M. (2024). An empirical analysis of SDG disclosure (SDGD) and board gender diversity: Insights from the banking sector in an emerging economy. *International Journal of Disclosure and Governance.* https://doi.org/10.1057/s41310-023-00223-2

Morales Hernandez, P. (2023). *Banking concentration and performance: A look at the Puerto Rico financial industry* [Doctoral dissertation, University of Puerto Rico]. University of Puerto Rico. https://repositorio.upr.edu/handle/11721/3382

Oficina del Comisionado de Instituciones Financieras (OCIF). (n.d.). *Estadísticas y reportería* [Statistics and reporting]. https://www.ocif.pr.gov/reportes-proveedores

Ordonez-Ponce, E., & Khare, A. (2021). GRI 300 as a measurement tool for the United Nations sustainable development goals: Assessing the impact of car makers on sustainability. *Journal of Environmental Planning and Management, 64*(1), 47–75. https://doi.org/10.1080/09640568.2020.1746906

PricewaterhouseCoopers (PwC). (2017). *SDG reporting challenge 2017: Exploring business communication on the global goals.* https://www.pwc.com/gx/en/sustainability/SDG/pwc-sdg-reporting-challenge-2017-final.pdf

PricewaterhouseCoopers (PwC). (2019). *SDG reporting challenge 2019: Creating a strategy for a better world.* https://www.pwc.com/gx/en/sustainability/SDG/sdg-2019.pdf

PricewaterhouseCoopers (PwC). (2021). *Management of non-financial information: Corporate value creation insights from advanced case studies.* https://www.pwc.com/jp/en/knowledge/thoughtleadership/assets/pdf/non-financial-information-management.pdf

PricewaterhouseCoopers (PwC). (2024). *PwC's Global Investor Survey 2024: Cautiously optimistic, investors expect growth.* https://www.pwc.com/gx/en/issues/c-suite-insights/global-investor-survey/global-investor-survey-report-2024.pdf

Rajawat, S., & Mahajan, R. (2024). Sustainability in banking literature: Review and synthesis of thematic structure. *Journal of Global Responsibility.* Advance online publication. https://doi.org/10.1108/JGR-06-2023-0096

Rosati, F., & Faria, L. G. D. (2019). Addressing the SDGs in sustainability reports: The relationship with institutional factors. *Journal of Cleaner Production, 215*, 1312–1326. https://doi.org/10.1016/j.jclepro.2018.12.107

Saxena, D., Dhall, N., & Malik, R. (2021). Sustainable banking: A roadmap to sustainable development. *Corporate Governance and Sustainability Review, 5*(3), 42–56. https://doi.org/10.22495/cgsrv5i3p4

Setser, B., & Marxuach, S. (2020). The Puerto Rican economy. In R. E. Looney (Ed.), *Handbook of Caribbean economies* (pp. 221–235). Routledge.

Sicoli, G., Bronzetti, G., Ruisi, M., & Rija, M. (2024). Sustainable development goals in the sustainability report. *Corporate Ownership & Control, 21*(3), 47–58. https://doi.org/10.22495/cocv21i3art4

Silva, S. (2021). Corporate contributions to the Sustainable Development Goals: An empirical analysis informed by legitimacy theory. *Journal of Cleaner Production, 292*, Article 125962. https://doi.org/10.1016/j.jclepro.2021.125962

Soto Lacourt, M. (2002, August 30). *Estado Libre de Puerto Rico* [Free State of Puerto Rico]. (World Summit on Sustainable Development Statement). United Nations Department of Economic and Social Affairs. https://sdgs.un.org/statements/estado-libre-de-puerto-rico-14881

van der Waal, J. W. H., & Thijssens, T. (2020). Corporate involvement in sustainable development goals: Exploring the territory. *Journal of Cleaner Production, 252*, 119625. https://doi.org/10.1016/j.jclepro.2019.119625

Zimmermann, S. (2019). Same but different: How and why banks approach sustainability. *Sustainability, 11*(8), 2267–2286. https://doi.org/10.3390/su11082267