




Review

Management of Green Intellectual Capital: Evidence-Based Literature Review and Future Directions

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Abstract: This paper presents a systematic, evidence-based review of Green Intellectual Capital (GIC) management, a construct first introduced in 2008 and increasingly recognized as a management concept in recent years. This review covers the literature on GIC from 2008 to 2020 and addresses the role played by intellectual capital as a framework to promote sustainability in organizations. With the aim of clarifying our knowledge on the application of the GIC paradigm, this paper reviews the findings on the outcomes achieved by organizations that adopt the GIC paradigm, the antecedents and possible mediation-moderation factors that enhance this process, and the contexts in which such outcomes emerge. Findings show that GIC offers a significant framework for promoting sustainability in organizations. However, even though this study underlines the increasing trend of GIC, there remains very little reliable data on the subject, particularly addressing the role played by GIC as a framework to promote sustainability in organizations. This literature review is valuable for both researchers and practitioners. From a theoretical point of view, it allows one to synthesize the outcomes of GIC to better delineate how it affects organizations and the environment. From a practical point of view, opening a debate about the actual outcomes of GIC allows one to overcome the theory–practice divide, making the value of GIC more accessible to practitioners and managers and pushing them to opt for a green shift in their organizations.

Keywords: Green Intellectual Capital; green organizational capital; green relational capital; green human capital; green intellectual capital management



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1. Introduction

The publication of the UN World Commission on Environment and Development, known as the Brundtland Report [1], is widely considered as the beginning of the continuously growing calls for sustainability and sustainable development. The report defined sustainability as “a development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [1]. The ‘greening’ of society was since then perceived as strictly interwoven with the ‘greening’ of the production cycle [2]. The Brundtland definition of sustainability has been the basis for the blossoming of environment-friendly strategies and practices among a growing number of companies, especially among manufacturing firms because of their strong impact on the environment. As a consequence of this new managerial direction, the concept of corporate sustainability was drawn up, encompassing three dimensions: Economic, referring to its financial performance; environmental, referring to preventing and reducing environmental damages; and social, referring to the wellbeing of stakeholders, societies, customers, and employees [3].

Two factors exert a growing pressure on organizations to move towards a greening approach and to implement the concept of corporate sustainability: Firstly, the adoption of international declarations and subsequent regulations on environmental protection, such

as the Montreal Convention in 1987, the Declaration of Rio Earth Summit in 1992, and the Kyoto Protocol in 1997; and secondly, the rise of environmental consciousness among customers and stakeholders [4]. In fact, environmentalism has proven to be a factor not only for addressing the inefficient use of resources [5], but also for developing competitive advantages, such as product innovation and green reputation, thus addressing stakeholders' expectations about environmental issues [4,6,7]. On the other hand, organizations show different degrees of involvement in environmental issues and in the adoption of consistent values and related practices, depending on their acknowledgement of sustainability as a key factor for their development and competitive advantage.

These tendencies highlight the need for defining a theoretical framework that could guide researchers and practitioners in understanding and successfully implementing corporate sustainability. This review proposes green intellectual capital (GIC) as a framework to study and promote sustainability in organizations. Despite the fact that the construct of intellectual capital (IC) was introduced by economic disciplines, it has been addressed and analyzed by several academic fields [8]. Among these, work and industrial psychology gives a unique contribution, as it considers the psychosocial dimension of organizational management, above all regarding human resources management [9]. A major concern regarding GIC in the current literature is its differentiation from other constructs related to intellectual capital implicated in corporate sustainability [10]. For this reason, the paper first presents and synthesizes the main literature on intellectual capital and corporate sustainability, with particular attention to the construct of GIC. Second, building on these theoretical underpinnings, it conducts a systematic review of the application of the GIC paradigm. A systematic review of the literature is a rigorous review of prior research and its results [11]. Through the analysis of the studies identified, the authors aim to understand: (a) The chronological and geographical distribution of papers addressing this topic; (b) the effective outcomes achieved when adopting the GIC paradigm, in different organizational contexts; (c) the main factors that promote the adoption of the GIC paradigm; (d) other factors that may mediate or moderate the relationship between GIC and organizational outcomes. Adopting a psychology-informed approach, this review contributes to the literature as it refers to organizational management from a psychosocial approach, thus linking human resources and relationships at work to the promotion of green-related knowledge in organizations.

2. Theoretical Background

2.1. Intellectual Capital and Corporate Sustainability

A recent literature review demonstrated that IC might offer a solid and effective organizational approach to sustainability, as well as to a firm's economic and social development [12]. In fact, in order to deal with the greening shift trend, organizations are required to continuously develop new knowledge and strategies, as well as to successfully endorse critical changes and achieve the commitment of their departments and members [13]. In this respect, Wasiluk underlines that, from the managerial point of view, both IC and corporate sustainability deal with a corpus of innovative knowledge that is able to develop critical intangible assets, as they both face the challenge of devising new approaches to the creation and the exploitation of their nonfinancial resources [3]. Furthermore, being aware of sustainability issues also strengthens the organizational legitimation, for instance gaining a higher reputation in the eyes of its stakeholders [14].

The attention paid to IC is grounded on the knowledge-based view theory [15]. According to this theory, knowledge is the most important strategic resource for any organization as it allows it to obtain competitive advantage as well as organizational and financial growth through the generation of intangible assets, namely intellectual capital assets [16–19]. According to the resource-based view, these assets are valuable, rare, and non-substitutable resources [20–22].

There are different definitions of IC, such as the following: “the possession of knowledge, applied experience, organizational technology, customer relationships and profes-

sional skills that provide [...] a competitive edge in the market” [23]; “the sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage” [24]; and “the collective knowledge that is embedded in the personnel, organizational routines and network relationships of an organization” [25]. Despite their variety, all these definitions refer to knowledge generation and intangible assets management [26,27]. Thus, IC is commonly understood as being composed of three dimensions: Human capital, relational (or social) capital, and organizational (or structural) capital.

Human capital (HC) is the sum of knowledge, skills, experience, intelligence, and training held by employees and reversed by them in the organization [28–30]. When they leave an organization, employees take their HC away with them. Relational capital (RC) refers to the organization’s formal and informal relationships with customers and stakeholders, as well as their perceptions about the organization [23,31,32]. This capital is the least directly managed by the organizations since it relies mainly on external actors. Organizational capital (OC) is the supportive non-physical infrastructure that belongs to an organization and remains within the organization when employees leave, and includes routines, processes, methodologies, patents, organizational culture, values, and norms [8,33].

2.2. Green Intellectual Capital

One of the latest developments in the field of research on IC and corporate sustainability, which began with the seminal work of Chen [4], is the conceptualization of “Green Intellectual Capital” (GIC). This is understood as “the total stocks of all kinds of intangible assets, knowledge, capabilities, and relationships, etc. about environmental protection or green innovation in the individual level and the organization level within a company” [4]. Since 2008, this has been the most referred definition of GIC [8].

The framework of GIC is the same as that of IC. However, while the IC approach understands sustainability as one of several intangible assets, GIC considers sustainability as the focus of the intangible assets as well as a driver for the generation and management of knowledge [10]. Thus, the concept of GIC offers the opportunity to embrace environmentalism in the whole organizational management.

In this respect, Huang and Kung argue that GIC makes a difference in organizations that have chosen to be focused on sustainability, since the awareness of environmental issues cannot guarantee the full accomplishment of sustainability and successful environmental management needs the deployment of both tacit and explicit knowledge [6]. GIC can assure congruency between the strategic choices, the operational side and the culture and values of an organization, and its intangible assets and capability to generate innovation [4,6,28,34,35]. Since GIC deals primarily with non-economic goals, it promotes the company’s long-term sustainable thinking [36]. This factor deserves to be underlined since it is difficult for the green management of a company to increase profits in the short term, which discourages the management and stakeholders from taking further steps in the direction of sustainability [14].

Adopting the tripartite conceptualization of IC, Chen sorted GIC into three components: green human capital (GHC), green organizational capital (GOC), and green relational capital (GRC). The first component, GHC, refers to all of the employee-level IC aspects related to a green orientation and is described by Chen as “the employees’ stock of knowledge, skills, capabilities, experiences, attitude, wisdom, creativities and commitment about environmental protection or green innovation” [4]. Therefore, GHC relates to both the employees’ capabilities and to their commitment [37,38]. This means that compliance with formal rules is not enough to attain sustainability, but rather it is necessary to promote employees’ voluntary green initiatives in the workplace, such as minimizing the use of electricity or paper consumption [39]. In addition, Broman and colleagues [40] and Kurucz and colleagues [41] identified sustainability leadership as extending beyond internal organizational efforts of creating and coaching effective teams, and as a broader move towards cohesiveness and a shared objective of sustainability, thereby significantly influencing the success and competitive advantage of an organization.

Chen refers to the second dimension, GOC, as all the organizational-level norms and procedures expressing a green orientation, namely “the stock of organizational capabilities, organizational commitments, knowledge management systems, reward system, information technology, databases, managerial institutions, operation processes, managerial philosophies, organizational culture, company images, patents, copyrights, trademarks, about environmental protection or green innovation” [4]. More generally, GIC management needs an organizational culture that can generate and accumulate green knowledge. For instance, the effectiveness of an organization’s innovation processes depends on whether the organizational culture [42] promotes the creation, dissemination, and retention of knowledge, and most importantly tacit knowledge, among its team members. Indeed, this significantly influences the success and competitive advantage of an organization [43]. The organizational culture also inevitably affects GIC management. Indeed, through the organization’s culture and values, GOC interacts with GRC, because the corporate public image is molded by these factors, as well as with GHR, since the company’s values and norms can boost employees’ green beliefs, attitudes, and behaviors [44].

The GIC’s third dimension, GRC, is related to all the social-level IC aspects expressing a green orientation. Specifically, according to Chen, GRC is “the companies’ accumulative interactive relationships with customers, suppliers, and partners about corporate environmental management and green innovation” [4]. In response to pressures in the recent decade in the areas of corporate social responsibility and social and environmental accounting, an increasing number of firms are publishing triple-bottom-line and sustainable development reports in addition to their financial metrics, which have been historically used to judge business performance [45]. For instance, this is the case of social reports to account the company’s commitment toward sustainability and make it known to their clients and stakeholders. Business leaders nowadays also emphasize the relationship of their organizations with society [46]. Stakeholder sensitivity to environmental issues is rather high in Western countries. So, it is interesting to understand how such interests translate into GIC-related procedures. The relationship between organizations and societies, indeed, forms the basis of GRC. The existing literature highlights that stakeholders’ environmental consciousness is able to push companies towards taking responsibility over sustainability. Moreover, GRC may help a firm to learn from its partners about its weaknesses and opportunities with respect to sustainability, as well as how to overcome problems, through mutual exchange of information and expertise [47]. GRC is also the major driver of the dissemination of the company’s positive approach towards sustainability, thus generating competitive advantage through higher legitimation and reputation.

It is well-known in the literature that the IC components interact with each other, generating organizational performance and competitive advantages [48]. Therefore, the three GIC components interplay with each other and are not independent dimensions, but rather interplay with each other. For instance, Turban and Greening’s study [49] suggests that GIC interacts with GRC since potential candidates who are environmentally conscious tend to be much more attracted by firms who are perceived to have a positive attitude towards sustainability. Their study also shows that GIC interacts with GOC. In fact, the latter holds the values, corporate culture, and behaviors that constitute the actual experience of the employees’ workplace, in terms of sustainability.

In fact, following the assumption of Edvinsson and Malone [23] about IC, according to which “corporate value does not arise directly from any of its Intellectual Capital factors, but only from the interaction between all of them”, organizational sustainability needs the interaction between GIC dimensions.

Studies on GIC are still at an early stage, but it is useful to take stock of the evidence collected thus far for a number of reasons. Firstly, from a theoretical point of view, an analysis of the effective results of GIC may further develop an understanding of how it affects both organizations and the environment. Addressing questions such as what works with GIC, what are GIC’s outcomes, or what are the differences in GIC’s outcomes among different types of organizations, can help to advance and further elaborate the

theory of GIC. In this respect, it is necessary to adopt what Mouritsen [50] defined as a performative approach to GIC, that is to understand the transformative role played by GIC in organizations and in its context [51].

Secondly, an evidence-based analysis of the achievements reached by GIC's management can help to overcome the theory-practice divide, making the value of GIC more accessible to practitioners and managers, and pushing them to opt for a green shift in their organizations [52]. The greening of an organization cannot be achieved in just one move. Most organizations that work with this objective find themselves in different stages of this change or are just taking their first steps in this direction, without yet considering turning their full approach towards the GIC paradigm. Therefore, the more consolidated the knowledge about the outcomes of GIC is, the more organizations can exploit the opportunities it offers [6].

3. Methodology

For the purposes of this systematic literature review, the paper selection followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement [53] and took place from April to July 2021. The process helps to ensure a rigorous review of prior research and results on the topic.

Eligibility criteria included:

1. Type of paper (e.g., literature reviews, case studies, research articles, conference papers, etc.);
2. Type of journal (i.e., peer-reviewed vs. non peer-reviewed);
3. Full-text availability (i.e., abstract only vs. full text);
4. The time range of the publication;
5. The language of the publication.

These criteria were fixed so that empirical studies published in peer-reviewed full-length articles and conferences papers from 2008 to December 2020 (included), written in English, were selected for this review. To ensure a high quality of the results, publications different than peer-reviewed research articles (e.g., commentaries, reviews, book chapters, editorials) were excluded from the data collection process [54]. The authors chose to include conference papers as the GIC construct is an emerging topic in organizational research. The chosen publication time range begins in 2008, since this is the year when Chen provided a shared definition of GIC. Finally, duplicate journal articles and conference papers were removed from the search.

3.1. Information Sources and Search Strategy

The databases and search engines employed for the search were Scopus and Web of Science. Each database required a different detailed strategy. Nevertheless, the following generic combination of keywords covered the focus of the research:

(green or environmental or sustainable) AND (intellectual or human or social or relational or structural or organizational) AND (capital)

Such keywords were searched for in the title, abstract, and keywords fields [54]. As shown in the keyword combination, the authors chose to consider all the common synonyms of the GIC dimensions (i.e., green vs. sustainable, social vs. relational, and structural vs. organizational) to avoid false negatives (i.e., not detected relevant papers).

3.2. Data Collection Process

According to the PRISMA workflow (see Figure 1), the data collection process was composed of four steps. In step 1, identification, a paper search was employed in both the Web of Science and Scopus databases. As the papers selected through Web of Science were included in the references found on Scopus, we chose the Scopus database to discover additional papers to be included in the review. The Scopus database includes more than 20,000 peer-reviewed journals [55] and thus emerged as a reliable source of research works. Furthermore, to take emerging peer-reviewed sources into account and to find other relevant works, a paper search was also conducted on Google Scholar. To identify other

relevant sources (Reed and Baxter, 2009), the authors scrutinized the reference section of the selected papers, looking for further works written in English that could fit the eligibility criteria and were included in the Scopus database. If the eligibility criteria were satisfied, the authors read their abstracts to check whether they could be included in the review.

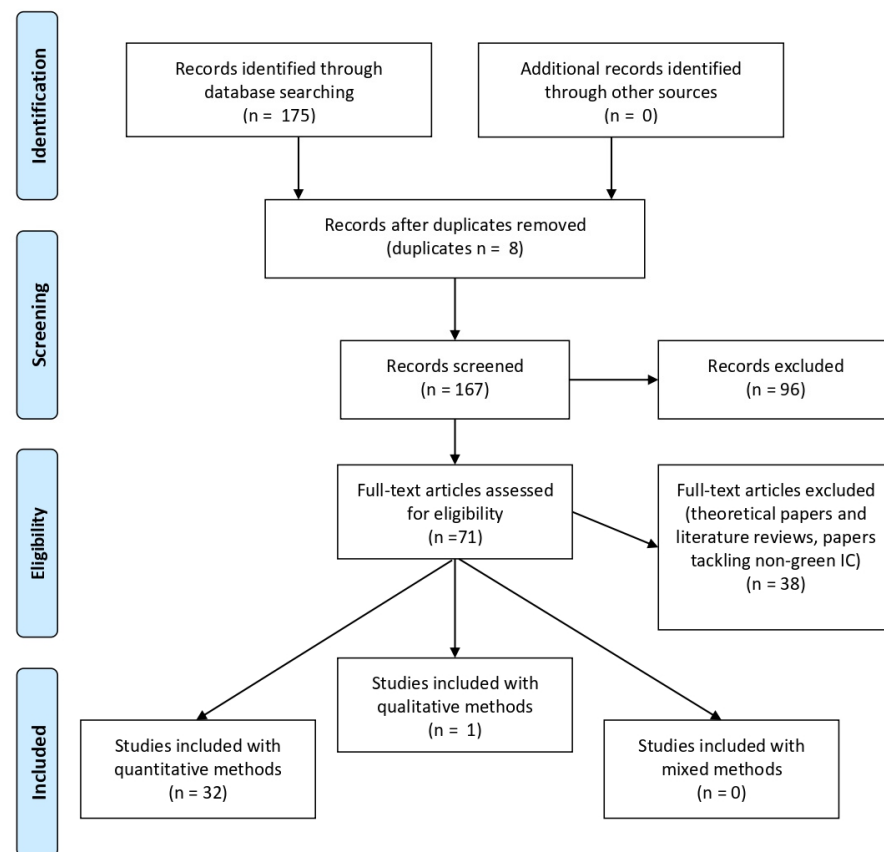


Figure 1. Study selection workflow.

In step 2, screening, all references were gathered in a Mendeley database and independently reviewed by the authors, who selected the final list of documents to be analyzed. In this step, all duplicate papers were deleted.

In step 3, eligibility, the authors identified the final list of eligible papers. As the chosen databases allowed to pre-select full-text availability, year, and language of publication, this manual selection procedure mainly regarded paper keywords and content. In this step, papers whose content was not fully within the scope of this review and did not include empirical research were eliminated. Consequently, papers regarding theoretical positions, prescriptive approaches, and best practices were deleted in this phase, as well as papers providing research findings on the relationship between green practices and the ‘traditional’ intellectual capital construct, instead of green intellectual capital.

Finally, this selection process allowed for the identification of papers to be included (step 4) in the review.

3.3. Studies Selection

After applying the inclusive and exclusive criteria (Figure 1), 19 papers were determined to be eligible for full-text analysis and were included for the review. Fourteen papers were retrieved from Scopus, while the remaining five were found on Google Scholar.

Table 1 shows the characteristics of the study, the participants, and the GIC construct for each selected paper, ordered according to the year of publication and surname of the first author.

Table 1. Paper, study, and GIC construct characteristics in the selected papers.

PAPER CHARACTERISTICS				STUDY CHARACTERISTICS		
Authors, Year	Countries and Regions	Type of Data Analyzed in the Paper	Type of Organization (Size)	Number of Participants	Type of Participant (Department)	GIC Construct
Chen, 2008	Taiwan	Quantitative	Information and electronics companies (SMEs and LEs)	126	Managers (Manufacturing, Marketing, R&D, HR)	Three-dimensional
Huang & Kung, 2011	Taiwan	Quantitative	Manufacturing firms (SMEs and LEs)	227	Managers (Safety and Environmental Protection)	Three-dimensional
Chang & Chen, 2012	Taiwan	Quantitative	Manufacturing firms	122	Managers (Manufacturing, Marketing, R&D, HR)	Three-dimensional
Liu & Liu, 2012	China	Quantitative	High-Tech firms	159	Managers	Green human capital
Chen & Chang, 2013	Taiwan	Quantitative	Manufacturing firms	106	Managers (Manufacturing, Marketing, R&D, HR)	Green human capital
Delmas & Pekovic, 2013	France	Quantitative	Generic firms	210	Employer, Employees	General measure
Delgado-Verde et al., 2014	Spain	Quantitative	Manufacturing firms (MEs)	157	Managers (Innovation, Environment)	Green relational capital, Green structural capital
Chaudhry et al., 2016	Pakistan	Quantitative	Manufacturing firms	480	Managers (Safety and Environmental Protection)	General measure
Rezaei et al., 2016	Iran	Quantitative	Manufacturing firms	33	Managers	Three-dimensional
Chen et al., 2019	Taiwan	Quantitative	Manufacturing firms	330	Managers (Manufacturing, Marketing, R&D, HR, Environment, Logistic, Supply chain)	Green social capital
Omar et al., 2019	Malaysia	Quantitative	Manufacturing firms (SMEs)	168	Managers	Three-dimensional
Susandya et al., 2019	Indonesia	Quantitative	Financial institutions	120	Managers, Employees	Three-dimensional
Yahya et al., 2019	Malaysia	Quantitative	Manufacturing firms	224	Managers (Environment, Manufacturing, R&D)	Four-dimensional
Yong et al., 2019a	Malaysia	Qualitative	Manufacturing firms (LEs)	4	Managers (HR)	Three-dimensional
Yong et al., 2019b	Malaysia	Quantitative	Manufacturing firms (LEs)	112	Managers (HR), Directors (HR)	Three-dimensional
Yusoff et al., 2019	Malaysia	Quantitative	Manufacturing firms (SMEs)	168	Owners and Managers	Three-dimensional
Dwianika & Gunawan, 2020	Indonesia	Quantitative	Food distribution (SMEs)	Unspecified	Owners, Employees	Green Entrepreneurial Intellectual Capital
Malik et al., 2020	Pakistan	Quantitative	Manufacturing firms (SMEs)	510	Managers (HR), Directors (HR)	Three-dimensional
Sudibiyi & Sutanto, 2020	Indonesia	Quantitative	Manufacturing firms	130	Managers (Manufacturing, Marketing, R&D, HR, Environmental Protection), CEOs	Three-dimensional
Yusliza et al., 2020	Malaysia	Quantitative	Manufacturing firms (LEs)	112	Managers (HR), Directors (HR)	General measure
Agyabeng-Mensah & Tang, 2021	Ghana	Quantitative	Manufacturing firms (SMEs)	152	Managers	Green human capital

Table 1. Cont.

PAPER CHARACTERISTICS				STUDY CHARACTERISTICS		
Authors, Year	Countries and Regions	Type of Data Analyzed in the Paper	Type of Organization (Size)	Number of Participants	Type of Participant (Department)	GIC Construct
Ali et al., 2021	Pakistan	Quantitative	Manufacturing firms (SMEs)	Unspecified	Managers (operation, production, environmental, safety)	Three dimensional
Amores-Salvadó et al., 2021	Spain	Quantitative	High tech manufacturing firms (LEs) (MEs)	Unspecified	Unspecified	Green structural capital
Astuti & Dadrini, 2021	Indonesia	Quantitative	Manufacturing firms (MEs)	72	Managers	Three dimensional
Jirakraisiri et al., 2021	Thailand	Quantitative	Manufacturing firms	514	Managers (environmental, safety)	Three dimensional
Mansoor et al., 2021	Pakistan	Quantitative	Manufacturing firms	187	Managers (HR), Directors (HR)	Green human capital, Green relational capital
Nisar et al., 2021	Malaysia	Quantitative	Services (Hotels)	374	Employees	Three dimensional
Shah et al., 2021	Baharain and United Arab Emirate	Quantitative	Services (Hotels)	346	Supervisors, employees	Three dimensional
Shoab et al., 2021	Pakistan	Quantitative	Manufacturing firms	287	Employees	Green human capital
Ullah et al., 2021	China	Quantitative	Manufacturing firms	1000	Employees	Three dimensional
Wang & Juo, 2021	Taiwan	Quantitative	High tech firms	No specified	Managers (general, R&D, Marketing)	Three dimensional

Note. GIC = Green Intellectual Capital; LEs = Large Enterprises; MEs = Medium Enterprises; SMEs = Small and Medium Enterprises; R&D = Research & Development; HR = Human Resources. In the Type of data column: Quantitative data included data from validated or adapted self-report scales; Qualitative data included data from semi-structured face-to-face interviews. In the GIC construct column: Three-dimensional = Green human capital, Green social/relational capital, Green organizational/structural capital. Four-dimensional = Green human capital, Green relational capital, Green organizational capital, Green innovation capital (only in Yahya et al., 2019). The use of 'relational' vs. 'social' and 'structural' vs. 'organizational' terms in the table depends on the original papers.

3.4. Data Analysis

The selected articles were carefully read and categorized according to the relevance of the topic. The data analysis consisted of five steps: Step 1 described the chronological distribution of the papers; Step 2 analyzed the characteristics of participants and organizations involved in the selected studies; Steps 3, 4, and 5 tackled the content of papers, according to our research questions. While the first two steps did not directly tackle the research questions, they provided the necessary context to interpret the findings, as well as to identify gaps in current research on GIC. In the first and second steps, the data analysis included a descriptive analysis of paper distribution along time and among countries (Step 1) and participants and organizations' characteristics (Step 2). Countries were classified according to the Country Classification report published in 2020 by the United Nations [56]. In the third step, the data analysis focused on how the green IC construct was measured in the selected paper. More specifically, the authors analyzed whether green IC was measured as a unique construct or considering the traditional three-dimensional structure of IC [22], including human, relational, or social capital, and structural or organizational capital. In the fourth step, data analysis focused on green IC antecedents and outcomes that resulted statistically significant in the selected papers. Finally, in the fourth step, potential mediators and moderators of green IC were searched for in the papers. Articles were first independently coded by each author; subsequently, results were confronted and eventual discrepancies in the classification of the paper content were discussed, in order to decide on a common codification of the articles.

4. Results

According to the steps described for the data analysis, the findings of the study are shown below and are divided according to the papers' three characteristics, namely the year of publication, the participants' characteristics, and the papers' content, specifically with regards to GIC's constructs, antecedents, outcomes, and mediators/moderators of its effects.

4.1. Chronological Distribution of the Papers

With regard to the chronological distribution of the papers, the selected works show an increasing trend in terms of the number of publications from 2008 until July 2021 (see Figure 2).

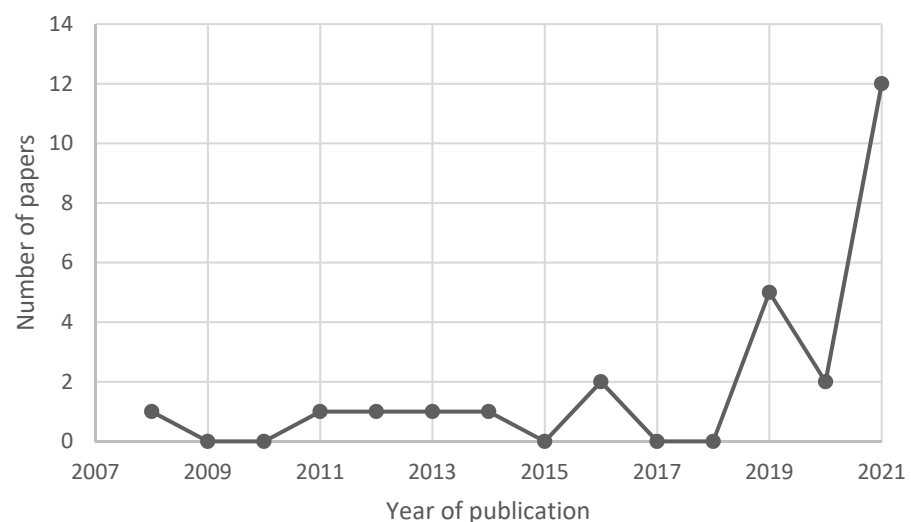


Figure 2. Chronological distribution of papers.

4.2. Studies' Characteristics

Three variables of the studies' characteristics were analyzed: The country in which the data gathering occurred, the type of organization involved, and the type of employees involved within each organization. With regard to the countries and regions where the studies were carried out, as shown in Figure 3a, Southeast Asian countries and regions are the most represented (with data from Indonesia, Malaysia, and Taiwan, included in four, six, and seven papers, respectively), followed by Southern Asia (with data from Iran, Bangladesh Pakistan, included in one, one, and four papers, respectively), Europe (with data from Spain and France, included in two and one paper, respectively), East Asia (with data from China, included in two papers), South East Asia (with data from Thailand, included in one paper), South West Asia (with data from Bahrein and United Arab Emirate, included in one paper), and West Africa (with data from Ghana, included in one paper).

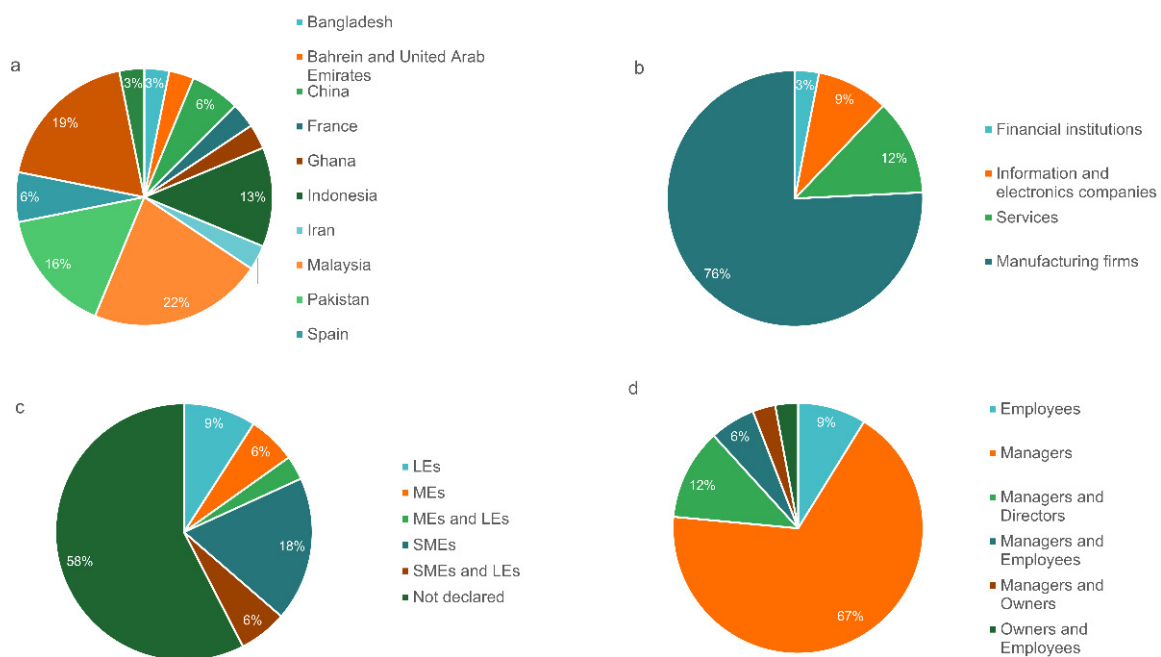


Figure 3. Studies' characteristics. (a) (data gathering countries); (b) (type of organizations involved); (c) (size of organizations involved); (d) (participants' organizational roles). Les = Large Enterprises; Mes = Medium Enterprises; SMEs = Small and Medium Enterprises.

In terms of the types of organizations involved, 84% (N = 23) of the organizations were manufacturing firms, as only seven studies involved different organizations, namely, financial institutions, information and electronic companies, high-tech enterprises, chemical and plastics companies, dairy firm, food distribution, and in only one were firms from all industries except agriculture, forestry, and fishing involved (Figure 3b). In only two studies, the organizations involved were not part of companies but were in the field of services (specifically, hotels). Furthermore, fourteen out of thirty-two papers provided information about the size of the participant organizations (Figure 3c). Almost half of the studies analyzed only SMEs (N = 7), three considered large enterprises, two studies considered both SMEs and large enterprises (N = 3), and one study considered only ME (N = 1). These studies were carried out in manufacturing industries and among emerging economies.

Finally, with regards to the type of employees requested to take part in the data gathering, the studies analyzed in the review involved only Managers (Figure 3d; N = 23), Directors (N = 4), Employees (N = 6), and Owners (N = 2). In fact, managers, directors, and firm owners can give the best information about their organizations' environmental policies.

4.3. GIC Construct

The findings show that GIC was measured as a three-dimensional construct (composed of green human capital, green relational/social capital, and green structural/organizational capital) in eighteen out of thirty-two studies, thus confirming the tripartite model proposed by the IC framework [22].

The remaining six studies either addressed GIC as a general construct (N = 2), thus calculating a general “green intellectual capital” score [57,58], or focused on specific GIC dimensions of the tripartite model of IC (N = 8), thus focusing on human [47,59–61], on social capital [62], on structural capital [63], on organizational and social capital [64], or on human and relational capital [65].

Finally, three papers used a different model of GIC, a four-dimensional model [66], a model in which Chen’s GIC understood as a general measure is combined with human capital and social capital proposed the IC framework [67], and a “Green entrepreneurial Intellectual Capital” construct [68].

In the first case, namely GIC as a general construct, the authors still referred to Chen [4], while using GIC as a general variable in their analyses. To the best of the authors’ knowledge, no indication was given in the studies to explain why a single effect for each dimension was not hypothesized in the models.

In the second case, the authors referred to Chen [4] as well, whilst choosing to focus on specific dimensions. Delgado-Verde and colleagues examined the effect of organizational and social capital on the innovation of environmental products [64]. In this case, while the definition of green organizational capital was based on Chen’s work, green social capital was defined as the environmental knowledge generated among the employees through their informal and personal relationships, thus referring to knowledge related to the employees rather than to the firm (differently from Chen’s definition of GRC).

In the third case, from the traditional tripartite conceptualization, the authors added a dimension or arrived at a new construct. Yahya and colleagues [66] classified green intellectual capital in four dimensions, namely green human capital, green innovation capital, green organizational capital, and green relational capital. In this case, the green structural capital (GOC) was divided into green innovation capital and green organizational capital. Dwianika e Gunawan (2020) proposed a model in which GIC measures were combined with (GE) Green Entrepreneurship measures (specifically, economic concern, organizational, and public concern concern). Overall, the authors of the studies analyzed, drawing on the IC tripartite conceptualization, mainly conceived GIC as composed of three dimensions, taking into account all of them (N = 18) or some of them (N = 5) in their studies. Only a few studies (N = 4) conceived GIC as a one-dimensional construct defined as a general awareness toward sustainability in organizational IC practices. The remaining studies (N = 3) proposed a new concept of GIC that differs from Chen’s tripartite conceptualization.

The following sections will describe how and why the selected papers analyzed GIC antecedents and outcomes.

4.4. GIC Antecedents and Outcomes

Table 2 shows the antecedents and outcomes of GIC that emerged as significant in the selected papers. As per Table 1, papers are ordered according to their year of publication and the surname of the first author. Thirty-one out of thirty-two studies (over 95%) attribute to each GIC dimension the same role, being either an antecedent or having an impact on organizational features or activities. The only exception was the study of Delgado-Verde and colleagues [64]), who ascribed a different role to the different GIC components considered. Indeed, in their model, the green organizational capital (GOC) affected environmental product innovation, and green social capital (GRC) mediated this relationship. Table 2 synthesizes the main antecedents, outcomes, and mediators found in the selected papers that will be described in detail in the following paragraphs.

Table 2. GIC antecedents, outcomes, and mediators.

PAPER CHARACTERISTICS		GIC CORRELATES
Authors, Year	Antecedents	Outcomes
Chen, 2008	–	Corporate competitive advantage
Huang & Kung, 2011	Environmental consciousness	Corporate competitive advantage
Chang & Chen, 2012	Environmental consciousness, CSR	–
Liu & Liu, 2012	CSR	Customer equity (<i>Green human capital</i>)
Chen & Chang, 2013	Corporate environmental ethics	Green relationship learning, Green innovation performance
Delmas & Pekovic, 2013	–	Labor productivity
Delgado-Verde et al., 2014	Green structural capital	Green social capital (mediator), Environmental product innovation
Chaudhry et al., 2016	Environmental consciousness	Corporate competitive advantage, Financial performance
Rezaei et al., 2016	–	Corporate competitive advantage (<i>Green structural capital</i>)
Chen et al., 2019	Network embeddedness	Green social capital (mediator), Green innovation performance
Omar et al., 2019	–	Organization learning capability (mediator), Business sustainability (<i>Green relational capital, Green structural capital</i>)
Susandya et al., 2019	–	Corporate competitive advantage (<i>Green human capital, Green structural capital</i>)
Yahya et al., 2019	–	Corporate competitive advantage (<i>Green innovation capital, Green organizational capital, Green relational capital</i>)
Yong et al., 2019a	–	GHRM
Yong et al., 2019b	–	GHRM (<i>Green human capital, Green relational capital</i>)
Yusoff et al., 2019	–	Business sustainability (<i>Green relational capital, Green structural capital</i>)
Dwianika & Gunawan, 2020	Business strategy	Green entrepreneurial intellectual capital (mediator)
Malik et al., 2020	–	Business sustainability
Sudibyi & Sutanto, 2020	CSR, Environmental consciousness	–
Yusliza et al., 2020	–	Financial performance, Environmental performance, Social performance
Agyabeng-Mensah & Tang, 2021	–	Financial performance, Green logistics practices
Ali et al., 2021	–	Green innovation adoption (<i>Green human capital, Green structural capital</i>)
Amores-Salvadó et al., 2021	Green technological distance	Reactive environmental strategy, Proactive environmental strategy
Astuti & Datrini, 2021	Environmental consciousness	Green competitive advantage
Jirakraisiri et al., 2021	Green strategic intent	Green process innovation performance
Mansoor et al., 2021	–	Environmental performance, GHRM (mediator)
Nisar et al., 2021	GHRM	Organizational performance
Shah et al., 2021	–	Environmental performance (<i>Green human capital, Green relational capital</i>), Environmental responsibility
Shoab et al., 2021	GHRM	Organizational commitment
Ullah et al., 2021	–	Business sustainability, IT capability (mediator) (<i>Green relational capital, Green structural capital</i>)
Wang & Juo, 2021	–	Economic performance, Green performance, Green innovation

Note. The findings regard all the dimensions stated in the GIC construct column, except for specifics into brackets (). Terms in italics indicate the dimensions of GIC to which the findings refer to. When both antecedents and outcomes are shown for the same paper, then GIC was used as a mediator. GIC = Green Intellectual Capital; CSR = Corporate Social Responsibility; GHRM = Green Human Resource Management. The use of ‘relational’ vs. ‘social’ and ‘structural’ vs. ‘organizational’ terms in the table depends on the original papers.

4.5. Outcomes of GIC (in Studies with No Distinction among Dimensions)

Consistently with the GIC framework, assuming its prominent role in enhancing the corporate competitive advantage, several empirical studies tested the effect of the adoption of a GIC paradigm on organizational performance outcomes. Studies that used a global measure of GIC or that did not distinguish between GIC dimensions in their statistical models (N = 8) found an association between GIC and organizational performance, measured as financial performance [57,69,70], innovation performance [71], or financial, social, and environmental performance [58]. Corporate competitive advantage emerged as an outcome of the adoption of GIC as well [6,57,72,73]. These studies therefore support the view that the greater the effort and investments that firms put in green knowledge, the higher their chances to have a good positioning in the market.

Among the previously mentioned studies, the model proposed by Chaudhry and colleagues provides a possible explanation for the relationships between GIC, organizational performance, and corporate competitive advantage [57]. More specifically, their findings show that GIC not only mediates the effect of environmental consciousness (predictor) on corporate competitive advantage, but even directly influences financial performance. According to the authors, the association among these constructs demonstrates that giving saliency to intangible assets (GOC), retaining skilled and committed employees (GHC), and having strong binds with other organizations (GRC), allows firms to reach a more competitive position in the market and achieve better financial performance.

Some other studies focused on employees' attitudes and behaviors. Constructing and sharing green knowledge within an organization increases the likelihood that employees engage in greener activities by reducing waste, costs, and consumptions [58].

All the studies reflected on the managerial implications of their findings. In this regard, the most mentioned implication is the increased chance to enter and benefit from participation in the international market [6,57,74]. The authors suggest that the stronger the green culture and the commitment to create internal green regulations, the higher the chances that a company can create more business opportunities in the global market, even in the absence of regulations (e.g., as in Taiwan, [6]). The high saliency given to entering the international market by means of implementing green practices and standards is mostly referred to as an opportunity to tackle the global market for developing countries [6]. For the same reasons, Rezaei and colleagues invite firms to disclose GIC-related activities in their reports [72].

4.6. Outcomes of Single Dimensions of GIC

Seventeen out of the thirty-two selected studies (53%) tackled the effects of single GIC dimensions on several organizational outcomes. Green human capital (GHC) was reported as having an impact on green human resource management, both in studies administering questionnaires to HR managers, directors, and employees [65,75], and in a study based on interviews with HR managers [76]. The authors of these studies explain that firms with good levels of GHC retain better informed and more experienced employees, who could suggest valuable improvements for corporate environmental practices, thus influencing green human resource management [75]. Consistently, Mansoor and colleagues showed that the GHC-GHRM link is associated to the green logistics practices, thus confirming the idea that HR departments taking into account employee green knowledge have a positive influence on firms' choices and performance [65]. Furthermore, in other studies [47,77], GHC mediated the effect of corporate environmental ethics on green relationship learning (meant as the ability to improve organizational green behaviors through relationships with other organizations) and green innovation performance (meant as the performance reached through the organization's green innovation). In other words, the authors expected that employees' environmental knowledge, attitudes, and commitment have a peculiar influence on the company-stakeholders' relationships and the firm's potential for innovation. Such hypotheses were built on the consideration that informed and engaged employees would better tackle stakeholder requirements, embrace the integration of technological innova-

tions, and boost the implementation of new green procedures. The authors showed that the more the employees are well-informed, aware, and dedicated to green issues, the more they are willing to learn about sustainability and improve their skills to deal with innovative technologies and production processes. The main managerial implication mentioned by these authors regards the attraction of valuable human resources in the selection procedure in order to maximize the employees' contribution to constructing a green organization. Finally, GHC emerged as an antecedent of competitive advantage [78,79], confirming Chen's [4] acknowledgment that GIC dimensions influence firms' competitiveness in the market. For this purpose, GHC has significant positive effects on customer equity [59]. In contexts such as the high-tech enterprises, which rely on the capability of innovation and development and aim to meet the needs of products or services for each customer, the internalization of GHC leads to maintaining good relations between companies and their customers, creating social value, and strengthening the reputation of the companies. In this sense, GHC represents a tool to manage customer relationships efficiently, provide products or services based on customer needs, and improve customer equity.

Green relational capital (GRC) was also found to have an impact on corporate competitive advantage [4], green human resource management [58], and business sustainability (directly [78,80], by means of organizational learning capability [81], and by means of IT capability [82]). Delgado-Verde and colleagues [64] found that employees' GRC influenced environmental product innovation. They also found out that GRC mediated the GOC-product innovation relationship, thus supporting their hypothesis that GRC would provide a basis for the expression of informal environmental knowledge of employees and that, in turn, it could influence the enactment of innovative products. In addition to innovative products, GRC mediated the relationship between network embeddedness and green innovation performance (meant as the performance reached through the organization's green innovation) [47]. This means that network embeddedness can affect green innovation performance both directly and through green social capital [62]. The association between GRR and environmental performance was confirmed by two recent studies, that reported a direct link between the two [65], as well as a mediated link by means of GHRM practices [83].

Overall, these results show that pressure from government regulations, customer expectations, employee values, and society leads to the adoption of greener procedures. Such findings confirm the Stakeholder Theory [84], according to which stakeholders motivate companies to adopt green practices. Furthermore, Malik and colleagues [78] underline that companies' focus changed over time, moving from a product-oriented to a customer-oriented approach. This shift implies a higher attunement to customer expectations for firms' attention towards green issues and better communication with customers regarding how firms are engaged in reducing their impact and promoting an environmental-conscious production. The main managerial implication mentioned for these findings regarded the advantage of collaborating with suppliers, customers, and partners to collect more green information from the market, enhance the construction of green organizational culture, gain access to more business opportunities, and, ultimately, achieve environmental goals. According to Omar and colleagues [81], firms in economically emerging countries may give specific saliency to GRC due to the low internal resources available. Making valuable connections with stakeholders and partners, instead, allows such organizations to develop relational intangible assets, so that the more relationships created in the market, the higher the chances to have access to more opportunities.

Finally, green structural or organizational capital (GOC) was found to impact environmental product innovation (both directly [64,77] and by means of GRC, [64]), competitive advantage and strategies [63,72,79], and business sustainability (in questionnaire-based studies, [78,81,82]; and in interview-based studies, [75]). A consideration shared by some of these papers regards the role of organizational structure in giving a corporate basis for the implementation of green practices, by creating a green culture that initiates and supports the implementation of green activities (e.g., [78,85]). Furthermore, the effect of

GOC on corporate competitive advantage was recognized, adopting the GIC framework as proposed by Chen [4].

The main managerial implication mentioned in the studies regarded the implementation of organizational structures and processes that would allow the accumulation and retention of green knowledge. Such knowledge includes environmental information and appropriate procedures to fulfill the environmental standards in the relationship with stakeholders, as well as in productive workflow.

4.7. Antecedents of GIC

Among the selected works, only twelve studies identified GIC antecedents. The most mentioned antecedent was environmental consciousness [13,57,73,86], followed by corporate social responsibility (CSR) [13,59,86], GHRM [61,70], corporate environmental ethics [47], strategic intent [71], technological distance [63], and network embeddedness [62]. According to these papers, the association between environmental consciousness and GIC is related to the positive representation of green issues that characterize firms with high levels of environmental consciousness. Perceiving the green issue in a “positive light” [6] enhances the firm’s engagement in cultivating green knowledge. More specifically, companies with high levels of environmental consciousness would be effective in sharing environmental policies with employees and giving them training opportunities to strengthen their abilities regarding green innovation and management (thus strengthening GHC), in revising their processes and activities to solve green issues (thus sustaining GOC), and in sharing their green concerns with stakeholders (thus supporting their GRC). The role of HR departments in pursuing higher GIC was reported by Nisan and colleagues and Shoaib and colleagues as well. The authors, indeed, show that the more the HR departments support the deepening of employee green knowledge, the higher their GIC [61,70]. Therefore, environmental consciousness with respect to green activities (e.g., the reduction of fuel consumption, the reduction of water waste, the proposal of green strategies) stimulates GHC, so that firms engaged in promoting GHC are more efficient than their competitors. On the other hand, environmental consciousness pushes the leaders to create environmental policies and environmental management systems as green structural capital, consequently supporting the implementation of green activities [86]. This is consistent with Jirakraisiri and colleagues, who showed that the stronger the organizational strategic intent with whom firms make green choices, the higher the GIC reported by the managers in the environmental and safety departments [71].

Corporate social responsibility and environmental ethics, mentioned as GIC antecedents by Chang and Chen [13], were linked to environmental consciousness as well. Interestingly, the authors proposed a model in which environmental consciousness and corporate social responsibility data were combined to define an overall ethical level of firms, showing that highly ethical firms scored higher in all the GIC dimensions. According to Chang and Chen [13], companies that give more importance to corporate social responsibility are more effective in retaining employees with high potential in terms of green knowledge (thus enriching their GHC), are attuned to technological innovation related to environment and sustainability (thus fostering their GOC), and are focused on stakeholders’ demands and opportunities for organizational partnerships (thus enhancing their GRC). Sudibiyi and Sutanto [86] adopted the study of Chang and Chen [13] to determine if the results could be different between developed and developing countries. They found out that corporate social responsibility had the same positive effect on both GHC and GOC, while corporate social responsibility had a stronger effect to GRC. Thus, these findings seem to show that CSR activities will build and drive good relationship with stakeholders.

Finally, a firm’s network embeddedness is positively associated with its green social capital (GRC). The network embeddedness reflects the impersonal or inter-firm relationships and linkages among social actors or groups. The more the green social capital is acquired from networks or inter-firm activities, the more resources and knowledge are, in

turn, obtained from those. More frequent interactions between members in a network are more conducive to the establishment of green social capital [62].

Thus, fostering corporate social responsibility and environmental consciousness exerts a double beneficial effect: First, it allows companies to strengthen their knowledge about sustainability, giving them a better competitive advantage; secondly, it allows developing countries to improve the pro capita income, as several research contributions, previously mentioned in this paper, reported organizational performance as the main GIC outcome.

4.8. Mediators of GIC Effects

Almost none of the selected studies identified variables moderating or mediating the relationships between GIC and its antecedents and outcomes. The only exception is represented by the study of Omar and colleagues [81] where organizational learning capacity emerged as a mediator of the relationship between GIC and business sustainability [81]. More specifically, this study showed that organizational learning capacity mediated both the GRC–sustainability relationship and the GOC–sustainability relationship. With regards to the first relationship, Omar and colleagues [81] hypothesized that knowledge coming from stakeholders could be examined, discussed, and integrated by employees by means of the organizational learning capacity, and used to change the organizational processes towards business sustainability. Regarding the second relationship, the authors [81] claimed that organizational learning capacity is related to the employees' ability to analyze, discuss, and learn from knowledge embedded in the green structural capital and that this relationship leads to more effective employee performance and greater sustainability.

5. Discussion

Overall, our findings suggest that GIC offers a significant framework for promoting sustainability in organizations. However, even though this study underlined the increasing trend of GIC, there remains very little reliable data on the subject, particularly addressing the role played by GIC as a framework to promote sustainability in organizations. A critical systematic analysis of the relevant literature provides a coherent and comprehensive perspective on the theoretical and practical aspects of the important role of GIC in organizational sustainability. The findings of this paper help to clarify our current knowledge on the organizational outcomes achieved by adopting a GIC paradigm, especially with regards to the antecedents and consequences of the adoption of such paradigm, the potential moderators or mediators of such relationships, and the description of the contexts in which such outcomes emerge. Hopefully, the first systematization of such information would help practitioners and managers in identifying a starting point to address the increasing demands from international declarations and regulations.

Findings from this review show that corporate environmental ethics and consciousness, as well as its CSR procedures, are usually reported as significant antecedents for the implementation of GIC. Corporate sustainability, indeed, has nowadays become an integral part of many organizations [87]. Corporate sustainability leverages shared values and lies at the intersection of economic, social, and environmental value forms [12].

At the same time, the main findings regarding GIC consequences show not only higher perceived sustainability, but even better GHRM, higher innovation and competitive advantage, and, more generally, a better performance. Consistently, organizations that successfully implement a green sustainability strategy are more likely to benefit from a sustainable long-term future on the economic, social, and environmental front [88]. Organizations around the world are increasingly trying to position themselves as economically competitive and, at the same time, as ecologically and socially sound [89].

Our review highlights that there are differences in the outcomes of the different GIC dimensions. However, all the findings consistently demonstrate that the higher the GIC, the higher the positive results achieved, regardless of whether GIC has a direct or a mediating role. These positive findings are encouraging and highlight the relevance for moving towards the adoption of the GIC paradigm, as well as the need for carrying

out more studies in this field. In fact, the evidence collected has consistently proven the relevance of GIC in achieving competitive advantage by enhancing the financial, social, and environmental organizational performance. These findings are encouraging, from a practical point of view, for further promoting the adoption of the GIC paradigm in organizations, and, from a theoretical point of view, for developing the knowledge on this approach.

Furthermore, our findings confirm the relevance of adopting a performative approach when analyzing the existing knowledge about GIC. In other words, there is a need for understanding the fundamental relations and paths between GIC and its dimensions on one hand, and the organizational performance on the other [50]. This approach helps to develop the knowledge on how GIC concretely operates, and which are the dynamics that are at play. Our study confirms the relevance of taking into account the multidimensionality of the GIC construct, showing that different dimensions of GIC uniquely affect specific organizational performance outcomes. On the whole, the review also highlights the relevance of GIC in achieving positive organizational outcomes, in terms of meeting environmental management as well as achieving competitive advantages and financial performance.

At the same time, meeting the sustainability challenge requires business leaders to have a broad understanding of the issues of economic, environmental, and social sustainability as well as the organizational collaboration capability to create and leverage knowledge, particularly tacit knowledge, required to implement innovative initiatives beyond simple product efficiency and process effectiveness [90]. To the best of our knowledge, only Omar and colleagues [81] have addressed this point so far, suggesting that green learning ability could act as a valuable mediator GIC and business sustainability. In future research, it would be interesting to address the effect of the organizational learning capability on the GIC-performance link, too.

Although the studies analyzed in this review were carried out above all in manufacturing firms, GIC, as the natural evolution of the IC paradigm, cannot be regarded as a model applicable only to this type of companies. Sustainability calls for the greening of every organization, no matter whether it is for nonprofit, private, or public. For instance, our review highlights a lack of studies on GIC carried out among public or governmental organizations, as well as educational institutions, such as schools and universities. Similarly, there is a lack of studies on nonprofit or other organizations that are less responsible for pollution, but which have a strong socioeconomic impact in every country and a few of whom are strongly committed to environmental advocacy [91]. This is an important shortage to address, that we do not know whether it is due to these organizations' lack of interest in GIC or if scholars have not focused on this research topic in these contexts until now. On the other hand, if the final aim of sustainability is the greening of the whole society, these organizations can play a role in achieving this goal. Yet, if GIC is to be extended to all kinds of organizations, it is important to disclose the process of both value creation and sustainability attainments that GIC can turn on in a specific context.

Similarly, there is a lack of studies carried out in Western countries, where stakeholders' sensitivity to environmental issues is rather high. However, the lack of studies does not imply a lack of management of green IC. Previous studies have shown that relational capital, in the light of the stakeholder theory, is a strong driver in the greening of an organization. This might be an interesting point to explore in Western countries with further studies.

Regarding further theoretical and research implications, it is worth highlighting that the findings collected until now need to also be validated in other contexts, namely in other economic sectors, as well as different economic, geographic, and cultural areas. There is a need also to deepen the insight into the differences between micro, small, medium, and large organizations, as size has proven to be the cause of relevant dissimilarities. This knowledge is important not only for advancing the GIC theory but also for the practice since this corpus of knowledge may help the growing greening of organizations.

Furthermore, none of the studies analyzed in our review dealt with the perspective of managers and practitioners about the challenges faced by their organization in dealing with environmentalism or with the adoption of a GIC approach. Future studies could tackle this issue, as this knowledge might offer interesting insights on how to further develop the adoption of GIC, overcoming difficulties, and challenges.

Finally, this work is not without limitations. Firstly, it lacks a meta-analysis, which could help define the role of GIC as a valuable antecedent of organizational performance and competitive advantage, as well as define more clearly the role of CSR and organizational ethics in structuring it. Secondly, we do not know whether valuable contributions to the field have been published in non-English journals. Thirdly, as systematic reviews contents and conclusions depend on previously published papers, their reliability depends on the design and execution of the selected studies.

6. Conclusions

Findings show that GIC is gaining increasingly more attention. From the publication of the seminal work of Chen [4], it took just a few years for scholars to get acquainted with this novel concept. In fact, from 2014, the number of scientific articles on GIC has steadily increased. The vast majority of the studies examined were carried out among emerging economies and almost exclusively by academics working in these countries. This datum cannot be interpreted as an absence of interest in GIC among Western or developed countries. Presumably, this fact may be read in light of a higher sensibility of the academic world coming from emerging economies to this issue, probably due to the specific situation of their social and economic environment. In fact, as Yong and colleagues [75] noted, many manufacturers from the emerging economy hold a strong belief that in the global market, the management of intangible assets and an environment-friendly approach may generate more business opportunities. Similarly, the attention paid to large enterprises and even more among SMEs to GIC might be linked to their search for ways to achieve competitive advantages and better performance.

Our review shows that strong attention is paid to the manufacturing industry when investigating GIC. This is due to several reasons. Firstly, this sector is regarded as one of the main actors responsible for the problems correlated with sustainability. Secondly, the pressure exerted by consumers and stakeholders has forced the manufacturing industry to shift towards a greening approach earlier and more pervasively than other sectors, such as the service sector.

Overall, this review highlights that organizations that rank high in environmental consciousness and ethics are more likely to embrace a GIC approach and that this, in turn, paves the way for better performance and competitive advantage, higher perceived innovation, and sustainability, and a higher likelihood to implement green human resources management. For this reason, it seems crucial to implement an interdisciplinary approach when studying GIC, so that knowledge and expertise from the fields of economics, work sociology, work and organizational psychology, and managerial science can collaborate to provide more cohesive guidelines to organizations.

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