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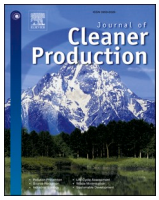

Review

Sustainability reporting in construction and real estate sector: A conceptualization and a review of existing literature

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1. Introduction

Research on Sustainability Reporting (SR) has become a key focus among diverse stakeholder groups, receiving substantial academic attention in top journals covering Cleaner Production, Environmental, and Sustainability disciplines (Rahi et al., 2021; Zhang et al., 2019). Contemporary discourses on sustainability elucidate the rationale behind the disclosure of Environmental, Social, and Economic (ESE) information by diverse business entities (Jones et al., 2015; Rahi et al., 2023). Over the past three decades, there has been a notable surge in societal expectations for the disclosure of non-financial information (Pigatto et al., 2023), driven by the need to surpass the limitations of conventional financial reporting (Hopwood, 2009). As stakeholder expectations increase, companies face pressure to extend their reporting scope beyond a focus solely on shareholders (Cho et al., 2015). Besides that, during the recent decade, evolving institutional pressure through e.g., laws and regulations influenced the disclosures of sustainability information (Laine et al., 2020) where companies strive to comply, ensuring their legitimacy and survival (DiMaggio and Powell (1983). According to institutional theory, institutions play a crucial role in shaping the organizational environment (Aragòn-Correa et al., 2020). One of the fundamental arguments underpinning the concept of sustainable business is that it fosters the creation of long-term value for stakeholders while serving as a mechanism for identifying and addressing opportunities and risks, while balancing ESE bottom-line (Mikes et al., 2017).

Industry-specific sustainability disclosures have gained emphasis from both global and European regulators, such as the Sustainability Accounting Standards Board (SASB) and Global Reporting Initiative (GRI) providing sector-specific guidance to understand similarities and differences among companies (Messner, 2016). As the literature on SR rapidly expands, sector-specific studies are needed to better understand interdisciplinary perspective on sustainability and reporting practices (Rahi et al., 2021). With the growing demand for planned cities and modern living spaces, the Construction and Real Estate (CRE) sector play a crucial role in the globalized world and considered as a critical area for sustainability and evaluating SR (Ghisellini et al., 2018). The sector is characterized by long real estate lifecycles (Li et al., 2019) (decades/centuries), a project-based construction nature, high capital intensity, complex supply chains, diverse stakeholder interest, and dynamic economic conditions like interest rates and regulations. It encompasses interconnected components within the broader built environment, including interest rates, investments, regulatory changes and supply, and demand forces.

Fluctuations in interest rates impact borrowing costs for construction projects and real estate mortgages, while changes in regulations, incentives, or subsidies impact development costs and investment decisions. Real estate drives construction demand through development, renovation, and expansion, while construction creates physical assets that are bought, sold, and managed within the real estate sector. This interplay means changes in one significantly affect the other. In this article the CRE sector encompasses companies involved in investing, developing, constructing, and managing buildings and infrastructures (GRI, 2016). Investing in sustainable buildings and infrastructures is essential for achieving the European Green Deal agenda and SDGs (MSCI, 2023).

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Previous literature review studies show that research related to SR has evolved since 1991 (Adams and Larrinaga, 2019; Pasko et al., 2021; Rahi et al., 2022, 2024). US, Australia, the UK, Germany, Spain, Canada, the Netherlands, and Italy are among the top countries that issued studies on SR, with a significant focus on various business sectors, including mining, energy, banking, and the public sector (ibid). Despite several attempts to review the literature on SR in the past, this review makes a novel addition to the literature by offering specific insights into SR in the CRE-sector. Whilst the SR literature in other sectors is rapidly growing, the same pace cannot be found in the context of the SR literature in the CRE sector (Zahid et al., 2016) although the CRE sector's vulnerability to sustainability issues. Conversely to the CRE sector's substantial role in the development of countries and contribution to the economy as declared by the European Construction Industry Federation (2022), 11.1% of GDP and 6.6% of total employment is contributed by construction activities (FIEC, 2022). This oversight hampers the assessment of social and environmental sustainability aspects within this sector, which are increasingly critical for stakeholders and society to make informed decisions and strategy development. To address this knowledge gap, this study will systematically map the interdisciplinary literature of SR in the CRE sector.

Ergo, to provide a holistic picture, this conceptual literature review synthesizes the results of extensive, yet diverse and fragmented studies, into a comprehensive framework. This study will contribute to the existing research by rigorously analysing the yearly publications trend, main journals, employed methodological approaches, theoretical lenses, and dominant perspectives discussed. Besides making a novel contribution to the sustainability accounting literature, this study helps identify possibilities for future investigation and gaps in the literature. Thus, the aim of this study is to explore the dominant and unexplored perspectives and concepts discussed in the previous literature. Besides that, it is of interest to figure out the connections within these dominant perspectives. Against this backdrop, this study reviews, and synthesizes 24 years of literature on the SR in CRE sector (since the first study in 2001) to provide a comprehensive understanding. A systematic conceptual review of 49 identified articles addresses the following research question.

What are the dominant perspectives, theories used, and methodologies applied in the existing literature of SR in CRE sector?

The remainder of this paper is organized as follows. Section two covers the theoretical background on SR, Section three outlines the methodology of the systematic literature, and Section four presents the findings and analysis. Section five discusses the findings and develops the conceptual framework, while Section six concludes the study.

2. Theoretical background

Sustainability Reporting (SR) is considered as a process of publicly disclosing a company's ESE performance and has become a mean to communicate information about sustainability strategies and impacts on various sustainability topics (Jones et al., 2015), contributing to the achievement of Sustainable Development Goals (SDGs) (GRI, 2016). SR assesses an organization's environmental impact by evaluating its resource use and waste management, its social contributions by examining its support for community well-being and ethical practices, and its economic performance by reviewing its financial stability and profitability (D'Eusanio et al., 2019).

SR encourages companies to be more open and responsible to measure and communicate their ESE effects (GRI, 2016). Organizations are driven by various motivations to measure these ESE impacts and enhance their sustainability performance. According to DiMaggio and Powell (1983), organizational behavior is driven by factors that can be understood through the three perspectives of institutional theory: the regulatory, normative, and cognitive. From the regulatory perspective, organizations are motivated by the need to comply with laws and regulations, ensuring their legitimacy and survival. The normative perspective emphasizes the role of shared values and professional standards, driving organizations to align with industry norms and societal expectations. Lastly, the cognitive perspective highlights how organizations are motivated by ingrained beliefs and cultural frameworks, shaping their actions based on what is perceived as appropriate or natural (Higgins and Larrinaga, 2014).

The concept of SR evolves from Triple Bottom Line Reporting (TBL) to Non-financial Reporting and has gained significant attention in academic literature. Existing research focusing on SR covers a variety of topics and perspectives, for example, stakeholders' engagement (Herremans et al., 2016), materiality assessment (Mio et al., 2020), extent and quality of SR (Papoutsi and Sodhi, 2020), frameworks of SR (Dumay et al., 2019), voluntary vs mandatory reporting (Guthrie and La Torre, 2020), theories used in SR studies (Cho et al., 2015) and critic on SR regarding fragmented standards and conflicting influences of significant actors (De Villiers et al., 2022), lacking transparency and completeness (Marquis et al., 2016) and inadequate disclosure of material issues (Farooq and De Villiers, 2019). However, the existing literature on the CRE sector does not sufficiently explore these perspectives. To best of our knowledge, this study is the first to provide a comprehensive review of SR in the CRE sector. Previous reviews have explored how CRE companies can innovate and leverage developments and digital technologies in an ecosystem setting (Vigren et al., 2022), variations across different SR tools in the built environment (Siew, 2016), the issues of materiality, independent external assurance and sustainable consumption (Jones et al., 2016). The most similar review to the current study focuses exclusively on the construction sector, examining nearly the same aspects i.e., identifies knowledge gaps, synthesis the themes and suggests future directions in the construction industry (Kazemi et al., 2023). Nevertheless, the dearth of thorough reviews on SR within the CRE sector hinders a comprehensive understanding of the literature related to CRE sector.

3. Methodology

3.1. Research design

For the interdisciplinary fields like business, management and accounting, various scholars (Fiandrino et al., 2022; Hahn and Kühnen, 2013; Traxler et al., 2020) have employed the methodology of systematic literature review to identify the research development, integrate and synthesize the findings across disciplines, key trends and gaps in the field. Following them, to fulfil the aim, a systematic conceptual literature review is deemed particularly appropriate for mapping the existing relevant literature (Tranfield et al., 2003) on SR in CRE sector and identifying key insights and gaps (Asif et al., 2024; Palmatier et al., 2018) in the literature.

To select the study sample and assess each article's relevance, the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) methodology has been followed Page et al. (2021). The article extraction process comprises four phases: Identification; Selection; Eligibility; and Inclusion.

In the identification phase, studies were retrieved from Web of Science (WOS) and Scopus during April 2024, following approaches by e.g., D'Eusanio et al. (2019) and Stornelli et al. (2021). Both databases are suitable for literature review due to their coverage of peer-reviewed journals (Olanipekun et al., 2017). To aligning with the Journal of Cleaner Production's interdisciplinary focus on sustainability, this study included articles from a broad range of multidisciplinary journals, not just accounting focused ones. All articles available in WOS and Scopus were therefore included. Keywords from previous sustainability studies were analysed to develop a comprehensive search string, enhancing the relevance of the search.

SR is a broad concept with various terminologies. To ensure a comprehensive and effective search that captures the full breadth of the literature, the keyword string ("sustainability reporting" OR "integrated

reporting" OR "green reporting" OR "environmental reporting" OR "non-financial reporting" OR "NFRD") AND ("real estate" OR "construction" OR "property" OR "property sector" OR "property market" OR "building") was designed to enter in the search bar. It provided 298 articles in Scopus and 190 in WOS. In the second phase, to ensure that all the studies underwent a peer review process, only studies of the "Article" type were selected, excluding conference papers and proceedings. Additionally, the criteria were limited to scholarly work conducted in the English language. After excluding review articles, 189 studies were found in Scopus and 147 in WOS. However, relevant information from the excluded reviews is still presented in the introduction section. After removing 26 duplicate studies the review encompassed a total of 310 studies. In the third phase (eligibility), to avoid overlooking key contributors within the specific topic during the selection process a two-stage screening has been conducted. Initially accessing the titles and abstracts, the full text has been screened subsequently by making sure that the term "sustainability reporting" or its above-mentioned synonyms are present. The articles having relevant content to SR, construction, real estate and/or both were selected, while others were excluded. It became apparent that not all the identified articles were relevant to the aim of the research, as some of the words (like "property," "building," and "construction") were used as linguistic terms in other fields and not aligned with the perspectives of SR in the CRE sector. This process led to a selection of 73 articles. This elimination was made by the careful consideration by individual researchers separately and then discussed and validated in the team. Following a thorough read of the articles, fifteen of them were found to be indistinct in terms of field (e.g., engineering but not related to the CRE sector) and focus area (e.g., urban

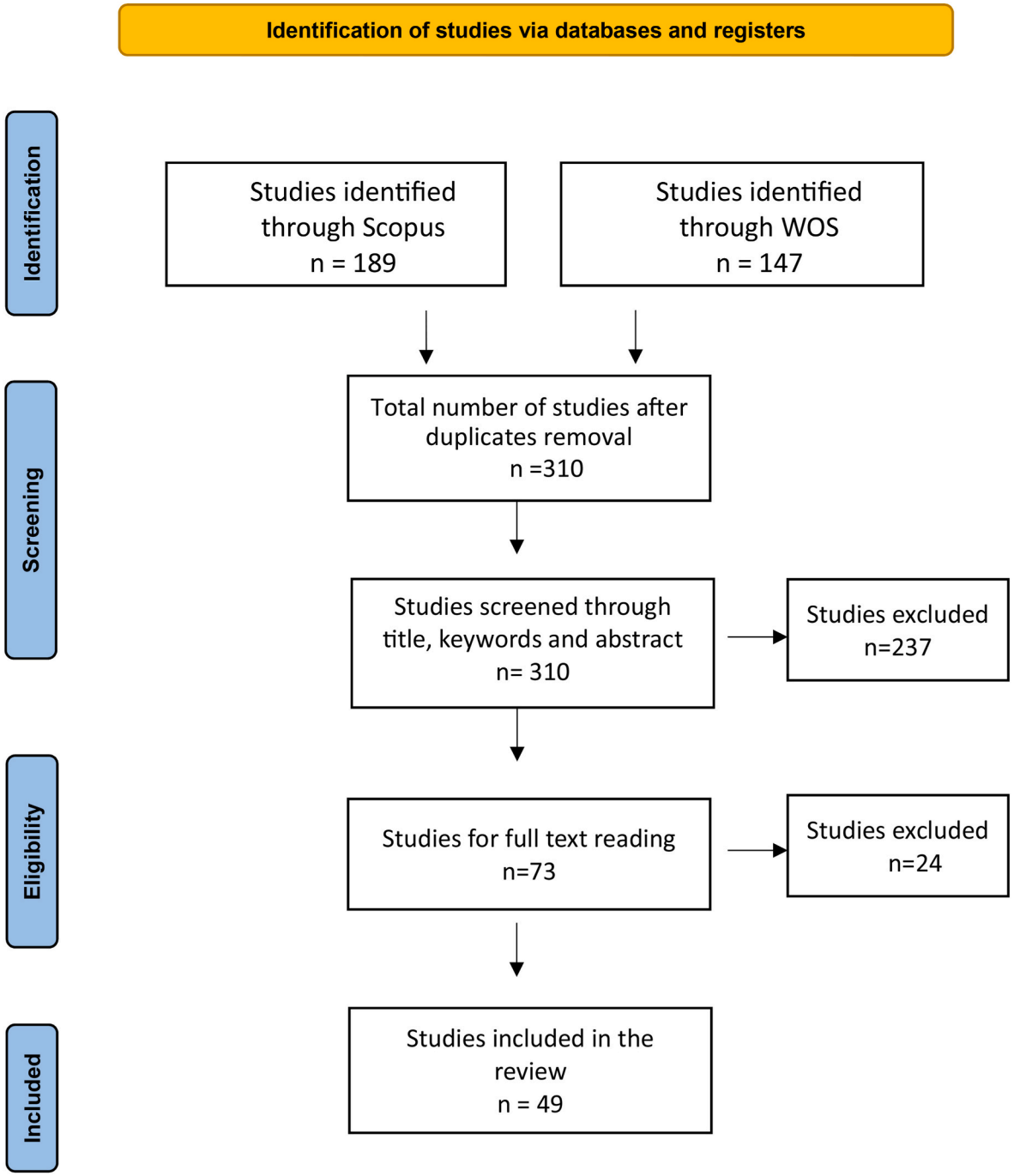

Fig. 1. PRISMA flow chart for selection: Authors elaboration following PRISMA (Page et al., 2021).

planning, cost analysis). Consequently, in the fourth phase (inclusion), after excluding nine inaccessible articles, a total of 49 articles were included for analysis. Fig. 1 illustrates the process flowchart for choosing literature by the PRISMA.

3.2. Data analysis

This study employed a qualitative content analysis approach. Descriptive analysis was used to contextualize the articles, presenting general information and study features to outline the traits of the included studies (Snyder, 2019). Data from the literature can also represent conceptual ideas or theoretical perspectives (ibid), which is the study's primary aim. To achieve this, the data were inserted in an Excel spreadsheet as a data-extraction form to reduce bias and enhance coding efficiency (Schultz et al., 2018; Tranfield et al., 2003). Manual coding by the research team was used to avoid issues with software misinterpreting ambiguous or similar terms (Guthrie et al., 2012).

For each article, the research title, aim, research question(s), applied theory, authors, journal, year, related sector (construction, real estate, and/or both), and findings were assessed. The authors then categorized the articles based on the SR perspectives, following Rosch et al. (1976), until a consensus was reached. Using the MacInnis (2011) process of conceptual thinking – identifying connections, patterns and significant underlying features – the descriptive findings were tabulated, theoretical stances discussed, and dominant and unexplored perspectives were synthesized into a conceptual framework.

4. Findings and analysis

This section reveals the analysis of the reviewed literature, highlighting key findings and predominant sustainability paradigms and their interrelations. It is divided into two sub-sections: the first shows descriptive data, and the second identifies perspectives and concepts discussed in the literature.

4.1. Descriptive analysis

SR is a crucial topic however the annual production of articles in the CRE sector is not consistently high, exhibiting an irregular pattern. When considering the countries studying this context it was found that Australia, UK, and Malaysia are the top three contributors. Although the total time of the studies spans from 2001 to 2024 (till April 2024), the growth has been observed from 2016 onwards, with some fluctuations. Before 2016, the publications can be considered as static, with only one article published every year except for the year 2010. Nevertheless, a significant proportion of manuscripts (79.34%) were published between 2016 and 2024. The possible reason could be the increasing number of various global SR frameworks (e.g., Integrated Reporting, GRI guidelines) and the evolution from voluntary to mandatory regulations for SR (e.g., the EU directive 2014/95/EU NFRD and CSRD). Fig. 2 provides the manuscript count per year, acknowledging that the study, conducted until April, may not fully represent the year 2024 in the sample.

The interdisciplinary nature of SR is evident from its publication in both accounting and non-accounting journals (Dienes et al., 2016). This study encompasses 49 articles that have been published across 41 peer-reviewed journals emphasizes the broad and varied nature of the research in this area, spanning multiple disciplines. Table 1 presents journals with at least two publications included in this review.

The varied methodological approaches highlighted the need for diverse methods to address the complexity of SR in the field. Table 2 illustrates that out of the 49 articles, 23 (47%) employed qualitative

Table 1
Main sources.

Journals	Number of publications
Sustainability Accounting, Management and Policy Journal	4
Property Management	3
Corporate Ownership and Control	2
Journal of Property Investment and Finance	2
Corporate Social Responsibility and Environmental Management	2

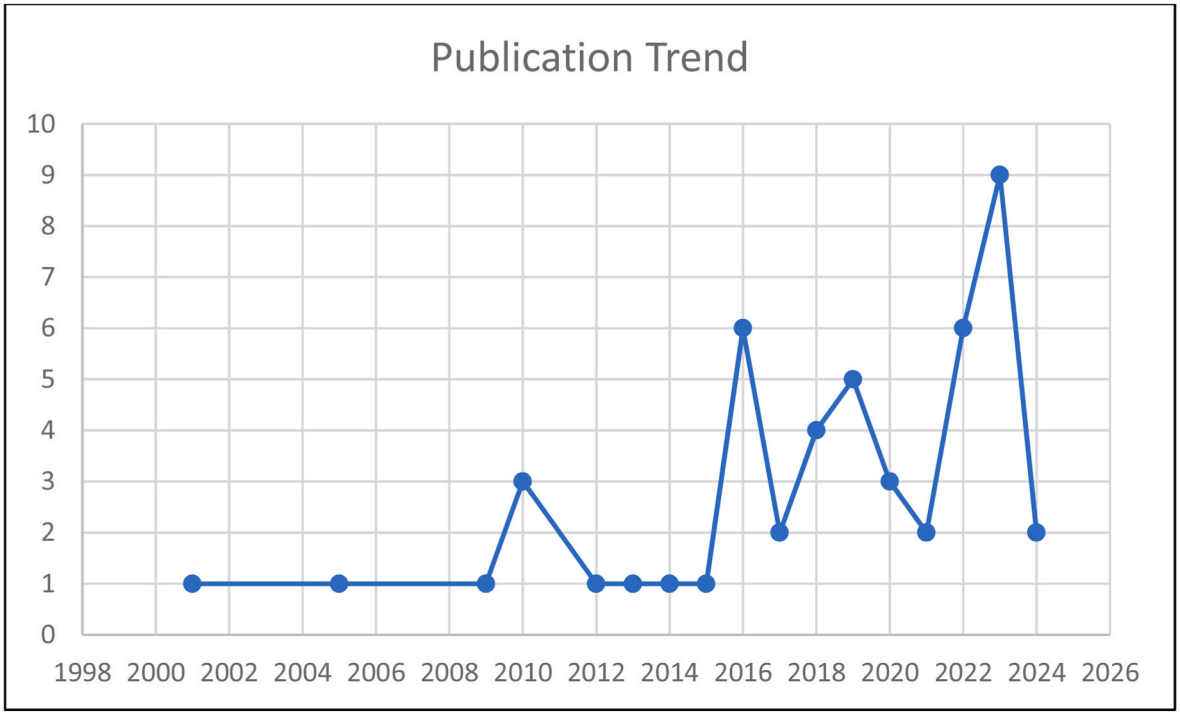

Fig. 2. Articles per year.

Table 2
Methods used.

Method/Design	Number of Articles	Percentage %
Qualitative	23	47
Quantitative	22	45
Mixed methods	4	8
Total	49	100

methods, while 22 articles (45%) employed quantitative approaches, indicating a balanced used of both. Only four studies (8%) utilized mixed methods.

The reviewing revealed that scholars often use a limited number of theoretical lenses, frequently in combination, potentially limiting depth of analyses. As shown in Table 3, most authors, similar to other reviews (Mattei et al., 2021), avoid using specific theory. When theories are applied, they include legitimacy, institutional, stakeholder, signalling, and sensemaking, each providing distinct concepts for interpreting SR practices in the CRE sector. Each theoretical perspectives offers a "toolkit" of concepts for interpreting SR practice. Legitimacy theory is the most dominant, used in six articles to explore how social expectations influence environmental and social disclosures (Mariappanadar et al., 2022; Sepúlveda-Alzate et al., 2022) and to understand the managers' rationale for using external sustainability disclosures to enhance corporate image and reputation (Ahmad and Haraf, 2013; Raka et al., 2020). By using legitimacy theory, Juusola and Srouji (2023), examine how companies strive to meet societal norms and stakeholder expectations to be seen as legitimate, while Soysa et al. (2024) demonstrated how companies align with societal and global norms to maintain legitimacy.

Institutional theory appeared in five articles, exploring variations in organizational responses (i.e., strategic decisions) based on the quality of occupational health, safety (OHS) and wellbeing disclosures across industries and economies (Mariappanadar et al., 2022). Utami and Barokah (2024) examined how governance structures and cultural norms on company and country levels influence a company's commitment to preventing corruption, while Cicchiello et al. (2023) studied how corruption levels impact corporate policy formulation. Whittingham et al. (2023) used the normative dimension of institutional theory to explore the relationship between the launch of the SDGs and changes in voluntary SR practices. Similarly, Sepúlveda-Alzate et al. (2022) used institutional theory alongside two other theories to analyse the weak institutional structures for materiality assessment in Latin American listed companies.

Stakeholder theory was applied in three articles to evaluate whether materiality disclosure meet stakeholder's needs (Mariappanadar et al., 2022; Sepúlveda-Alzate et al., 2022) and to highlight stakeholder engagement in SR development (Rashidfarokhi et al., 2018). Furthermore, signalling theory was used in two articles, in conjunction with legitimacy theory, to analyse how SR content signals different messages to various stakeholders. Signalling theory suggests that reporting is driven by the need to demonstrate control over non-financial aspects to maintain or improve business value and mitigate adverse selection risks (Raka et al., 2020; Van Zijl et al., 2017). The theory of Affordances, used in one article (Troshani and Rowbottom, 2024), examines how information infrastructures and SR practices interact and influence organizational sustainability.

Finally, sensemaking theory was used in one study (Le Roux and Pretorius, 2019) to analyse how managers in CRE companies make sense of environmental and social sustainability. Overall, these theoretical lenses, combined with content analysis, helped elucidate the underlying expectations, stakeholders' needs, and managerial perspectives. The results indicate a trend in the academic community towards emphasizing the need for further exploration and diverse theoretical perspectives, while also advocating for more in-depth analyses using single theories in future research.

Table 3
Theoretical perspectives used in the literature.

Theoretical Framework	Number of articles	Percentage %
Single theory	8	16.3
Multiple theories	5	10.2
No Theory	36	73.5
Total	49	100

4.2. Identified perspectives and concepts

The categorization of perspectives and concepts emphasizes a comprehensive exploration of the motivations and hurdles surrounding SR, with a partial discussion on potential solutions. Following MacInnis's (2011) process of conceptual thinking, it was determined that besides the above descriptive findings, researchers predominantly study the reasons and motives for the practice of SR as well as the challenges and constraints of the SR practice. Going deeper into the conceptualization helped to outline that studies related to reasons and motives are addressing "*why*" questions while challenges and constraints were directing to "*what*" questions. The "*how*" question was addressed in the literature when researchers suggested the potential solutions to the embraced constraints. For convenience, these dominant perspectives (reasons, motives, challenges, and constraints) were divided into the following four categories. The first two categories are related to *what* perspectives, and the last two are related to *why*. The *how* is discussed slightly in these four categories.

(i) Varying content and quality of SR disclosure
(ii) Practical barriers for SR practice
(iii) Rationales behind internal SR practice
(iv) Drivers of external SR disclosures

4.2.1. Varying content and quality of SR disclosure

The literature encompassing SR disclosures within the CRE sector presents a diverse panorama of insights, albeit with certain fragments.

This segment of knowledge delves into the content and quality of SR disclosures, yielding a nuanced understanding of the prevailing landscape of *what* is disclosed. One notable study explored the content of SR within Nordic real estate sector (Rashidfarokhi et al., 2018). It uncovered a divergence in the quality and quantity of reporting between the real estate sector and other industries, revealing their emphasis on environmental sustainability themes. Likewise, Squier and Booth (2023), examines how the UK real estate sector prioritizes different SDGs and there are differences in focus and the level of detail provided in SR. Contrastingly, a content analysis of reporting practices within Malaysian construction companies, revealed that corporate governance disclosures dominate, overshadowing environmental and social aspects (Siew, 2017). This variation underscores the contextual influences that shape the content priorities within SR disclosures.

In alignment with the ongoing exploration of SR disclosures within the CRE sector, the research landscape delves into multifaceted dimensions that shed light on diverse considerations. This journey unfolds with an acknowledgment that while stakeholders express keen interest in the transparency of ESE disclosures within the reports (Jones et al., 2015, 2016) companies operating across the spectrum of real estate prioritize Environmental, Social, and Governance (ESG) topics based on their material relevance within their unique organizational contexts. This differentiation is underscored by an investigation into materiality and assurance processes prevalent within SR of European and UK construction companies (ibid). These studies consistently illuminate an insufficiency of information regarding these critical processes, resulting in a lack of credibility and reliability associated with sustainability disclosures within the reports. Recognizing these shortcomings, Ahmad and Mohamad (2014) and Ahmad and Haraf (2013) advocate for

specific environmental reporting requisites to enhance construction companies' environmental accountability and foster consistency in sustainability disclosures. The authors advocate for proactive government interventions, including legislation and comprehensive guidance for environmental reporting, to avoid bias toward projecting a favourable image.

Materiality emerges as a key concept in the sustainability disclosure discourse, as highlighted by Sepúlveda-Alzate et al. (2022). This process is depicted as a social construct closely linked to stakeholder engagement, albeit clouded by ambiguity due to the lack of a definitive distinction between material and non-material elements. The findings show that compared to other industries, extractive industries tend to share more information about their ESG practices, as they cause more harm to the environment. As Rashidfarokhi et al. (2018) uncover a lack of clear strategies for integrating materiality, external assurance, and stakeholder involvement within the sample reports, hinting at a predominant motivation driven by legal obligations and risk aversion. Having similar focus Glass (2012), Jones et al. (2015), and Jones et al. (2016) expose vagueness and issues related to authenticity, credibility, accuracy, and reliability of sustainability disclosures. Glass (2012) compares the CRE sector's SR with other sector, revealing significant disparities characterized by fragmentation and inconsistency. Hadro et al. (2022) shows that sustainability reports often fail to address stakeholder needs and expectations, neglecting topics like circular economy, unethical business practices, migrant policy, and human trafficking. Furthermore, selective reporting is evident in sectors like airports, where sustainability information is disclosed in only 10% of countries globally (Ramakrishnan et al., 2022).

Thus, existing research underscores the necessity for innovative frameworks and apt performance indicators to guide the evaluation of environmental performance. Pigatto et al. (2023) found varying levels of integration across content elements and principles, noting challenges in integrating the six forms of capital into business models and forecasts. Besides limited disclosure in materiality and stakeholder relationships, geographical differences were observed, with higher integration scores for companies aligning with SDGs. The real estate sector showed lower integrated reporting quality compared to other sectors. Meanwhile, Rossetto (2023) suggests that despite valid concerns about greenwashing, much innovation in environmental sustainability remains confidential for competitive reasons. The study recommends clear communication strategies to differentiate between disclosed information and confidential innovations, aiming to address greenwashing concerns.

Part of the CRE sector is directly related to areas such as occupational health and safety (OHS), emerging as another focal point of inquiry within the sustainability disclosures discourse. Research into OHS disclosures within construction companies underscores a voluntary inclination toward OHS information disclosure beyond the purview of legal requisites, primarily for maintaining social legitimacy (Evangelinos et al., 2018; Mariappanadar et al., 2022; Mavroulidis et al., 2022). However, these studies reveal that while basic OHS information is disclosed, essential details relevant to stakeholders, such as information on OHS procedures within supply chains and the composition of OHS working committees, remain absent (ibid).

In the pursuit of comprehensive insight, company experience emerges as a vital determinant of the quality and extent of sustainability disclosures (Szczepankiewicz, 2021). The findings indicate improved reporting quality, widespread sustainability practices, and varying levels of risk disclosure, emphasizing the necessity for standardized disclosures and external verification for CRE sector in Poland. The study by Tirumala and Upadhyay (2023) examines SR in the real estate sector using GRI standards, revealing a strong focus on emissions and energy but less on biodiversity, materials, and supplier environmental assessment, with no significant correlation between environmental disclosures and financial performance. It highlights the need for policies tailored to local contexts in Australia and India, considering environmental conditions, regulatory landscapes, and cultural factors to ensure effective environmental reporting.

Harymawan et al. (2020) analyse sustainability reports of 152 construction companies on the Indonesia Stock Exchange (2010–2018) to inform investors, governments, and communities about companies' ESE strategies. Using text mining, they found that companies use positive terms like "sustainability" and "support" to indicate commitment, while to negative terms like "waste" and "corruption" highlight reported problems.

In essence, deficient insights regarding materiality, assurance, OHS, and ESE information undermine the authenticity, credibility, and ambiguity of sustainability disclosures in CRE. In this, wording matters for *what* is disclosed.

4.2.2. Practical barriers for SR practice

In conjunction with the prevailing discourse on SR practices and *what* is disclosed, a critical component involves recognizing practical barriers that impede such practices within companies. A notable theme in the literature pertains to the interplay between sustainability knowledge and the valuation processes employed by CRE sector. Various studies have shed light on the complexities of this connection. For instance, the study by Warren-Myers (2016) delved into the Australian property market, revealing a deficiency in valuers' comprehension of sustainability nuances, ultimately affecting property valuations. Similarly, the Royal Institution of Chartered Surveyors (RICS) surveyed across Europe and the UK, indicating that although some valuers received guidance on sustainability from RICS, the actual impact on valuation practices remained limited, largely due to challenges stemming from inadequate data, lack of awareness, and resistance to integrating sustainability within valuations and reporting practices (Michl et al., 2016).

Despite concerted efforts by academic and professional groups to strengthen valuers' understanding of sustainability perspectives, persistent hurdles within the accounting profession obstruct the seamless integration of sustainability considerations into real estate valuation processes (Thanh Le and Warren-Myers, 2019), emphasizing the urgent need for improved professional development programs to align with market changes (Warren-Myers, 2016). While aspirations to include sustainability aspects within valuations exist (Ibiyemi et al., 2019). The reality is that practical obstacles including inconsistent data, knowledge gaps, limited tools, and client reluctance continue to hinder their effective implementation (ibid).

Moreover, the discourse highlights the significance of environmental costing as a tool to combat resource depletion, thereby preventing reputational harm to CRE entities. This notion resonates with Chan and Lam (2001) proposal to integrate green costs into management reports, emphasizing the necessity for better measures in addressing emissions through proactive pollution management and reporting in trade journals. Additionally, literature emphasizes adopting a supply chain perspective on building materials in SR (Andrea Blengini and Shields, 2010), highlighting the critical role of communication tools and strategies in promoting eco-friendly market outlets. In tandem, the potential of management accounting tools, including the environmental management accounting model, to comprehend and disclose environmental costs in real estate becomes apparent (Nyide, 2016). Yet, their practical deployment faces challenges due to limited expertise and understanding of the sustainability dimension, hindering the effective identification and allocation of environmental costs. Likewise in their study, Troshani and Rowbottom (2024), discusses how information infrastructures influence SR practices in large listed Australian companies and how regulations and costs influence information infrastructures. Companies find it hard to report on sustainability because they struggle to build or adapt their information systems to include sustainable development factors. Despite this, it was found that regulatory-driven infrastructures are more advanced than those supporting non-legislative. Moreover, the study by Juusola and Srouji (2023) addresses the challenges associated

with SR practices faced by organizations in the Middle East and North Africa (MENA) region. Key challenges include integrating sustainability with financial reporting, addressing resource constraints, ensuring transparency and accuracy, dealing with inconsistent standards, and balancing diverse stakeholder expectations. A recent study reveals that corruption is an additional cost to society and it influences corporate sustainability disclosure particularly in African and Asian countries with weak governance institutions and fragile legal systems (Cicchiello et al., 2023). It was identified that companies operating in environments with high corruption are less likely to engage in SR.

In the broader context, these insights spotlight that corporate engagement with social and environmental sustainability often necessitates economic resources, which are inherently limited (Aiello, 2010). Consequently, these limited financial resources can constitute tough barriers hindering the advancement of real estate companies toward sustainable design and construction practices, as well as the adoption of SR (ibid.). Consequently, this interplay between knowledge, valuation, practical barriers, and economic constraints underscores the intricate landscape within which SR practices evolve in the realm of CRE.

4.2.3. Rationales behind internal SR practice

Previous research has illuminated diverse incentives prompting companies to adopt SR practices providing insights into *why* information is disclosed. A commonly cited rationale is that companies engage with SR not only for the benefit of stakeholders but also for their advantage. For example, companies gain from enhanced corporate reputation, improved strategic planning, and more effective risk management by raising awareness about environmental risks and opportunities. This not only aids stakeholders in making informed investment decisions but also yields benefits for the companies themselves (European Commission, 2019). An illustration of this connection is found in the study by Butković et al. (2021), emphasizing the significance of integrating CSR and stakeholder engagement in Croatian construction companies to bolster their reputations. The study posits that the implementation of CSR serves as an efficient mode of stakeholder engagement, which, in turn, curtails external pressures arising from negative societal impacts and risks. Scholarly discourse has emphasized that initiatives related to CSR within operational strategies can support corporate reputation (Sila and Cek, 2017). This is mirrored in discussions about embedding sustainability into strategic and operational levels, particularly from employee perspectives. An example of this is demonstrated through a study by Le Roux and Pretorius (2019) on listed property companies in South Africa and their relation to integrated reporting practices. The study reveals that integrated reporting drives sustainability embeddedness and organizational changes, offering insights into employee sensemaking, and suggesting implications for practice, society, and the environment.

Equally, the role of culture and its intersection with SR practices has emerged as a significant factor in shaping reputations centred on sustainability. To illustrate, Raka et al. (2020) examined the correlation between an environmentally conscious corporate culture within the hotel industry and the establishment of a "green hotel" reputation. The symbiotic relationship between environmental awareness, internal engagement with environmental concerns, and the practice of environmental reporting has proven instrumental in fostering a reputation as a "green" establishment and nurturing customer trust.

In their study, Beretta et al. (2018) investigate relationship between intellectual capital disclosure (ICD) in integrated reports of European listed companies and company performance, highlighting that an optimistic tone in ICDs correlates with improved non-financial performance in ESG aspects, supporting an incremental information approach. Whereas assessing the level of disclosure and exploring the influence of company structure, performance, and market factors, the study of Ghani et al. (2018), shows no significant association of financial performance indicators with integrated reporting disclosure. Nevertheless, company size and audit firm size are identified as the only significant influencers. The study of Gao et al. (2005) revealed that company size impacting disclosure levels in Hong Kong. Isaksson and Steimle (2009) highlights that the existing GRI guidelines not adequately facilitate cement companies in tracking their progress in corporate sustainability performance. Furthermore, Bhatt and Ramachandran (2010) reveal a correlation between company s' confidence in discussing green accounting and their provision of reliable information on environmental performance in annual reports. Cross-national comparisons unveil intriguing variations, such as the contrast between building and manufacturing companies in Malaysia and Singapore. Notably, companies in Malaysia demonstrate more extensive environmental disclosures, potentially driven by stakeholders' concerns (Bhatt and Ramachandran, 2010).

Furthermore, studies have interpreted the critical role of governmental intervention and regulatory frameworks in guiding SR practices within the CRE sector. An exploration into the social sustainability performance associated with the use of recycled and natural construction materials revealed practical obstacles in formulating a systematic social sustainability assessment tool in compliance with established standards and guidelines (e.g., GRI, ISO 26000). Regulations and government backing are crucial for providing direction and establishing a framework for SR, particularly concerning social sustainability assessment (Hossain et al., 2018). In a parallel vein, Raka et al. (2020) recognizes the potential impact of regulations and governmental guidance on SR, thereby advocating for future research that integrates corporate policies and governmental regulations into its purview. Likewise, the study of Whittingham et al. (2023) examines how normative pressures from the UN SDGs have influenced companies to incorporate the SDGs into their SR. In a latest study Utami and Barokah (2024), examines how company - and country-level governance and cultural factors, especially uncertainty avoidance, influence anti-corruption disclosures. Governance factors like government ownership, high-quality auditors, and accounting competence significantly impact disclosure levels in the construction sector across several Asia-Pacific countries. The study highlights the need for stronger regulations to enhance anti-corruption efforts in the region. Glaveli et al. (2023) examined how well Greek listed companies follow the Corporate Sustainability Reporting Directive (CSRD) in disclosing their sustainable business models and strategies. Most companies demonstrate immature sustainability disclosures, with only a few exhibiting a higher level of maturity. The study emphasized the importance of considering both financial and impact materiality in SR.

To put it briefly, the interplay of culture, regulations, and reporting practices collectively reinforces the notion that different external factors exert considerable influence over the trajectory of SR practices and their resultant reputational implications.

4.2.4. Drivers of external SR disclosures

Within the comprehensive landscape of sustainability disclosures in the CRE sector, there exists a visible dearth of studies examining *why* information is disclosed and the driving forces behind these disclosures. Nevertheless, a few notable inquiries highlight key determinants, including factors such as legitimacy, financial benefits, and customer loyalty.

Van Zijl et al. (2017) delve into the realm of business strategy and the extent of customer engagement as critical drivers compelling social and environmental disclosures. These disclosures serve a multifaceted purpose, from safeguarding organizational legitimacy and bridging information asymmetry to diminishing capital costs and instilling investor confidence in the entity's adept handling of sustainability-related concerns. Their study highlights that, financial disclosures tend to overshadow social and environmental disclosures within the reports, underpinning a prevailing view among companies that financial capital providers hold a privileged stakeholder status. Meanwhile, Chen et al. (2016) unveils a noteworthy revelation: environmental management practices exert substantial influence on the short-term and long-term

financial performance of multinational construction companies. This underscores that environmental sustainability can significantly impact financial sustainability, thereby positioning it as a critical driving force.

Elevating this narrative, real estate companies seeking to attract diverse stakeholders, including customers with their augmented satisfaction and heightened willingness to pay a premium, must adopt a multifaceted approach (Hopkins, 2019). Moreover, committing sustainability activities and CSR policies to a company's strategic approach helps companies balance economic and societal values while managing stakeholder relationships (Mitra, 2016). A significant opportunity for property management companies to showcase green practices on their websites, potentially benefiting both environmental sustainability and financial goals (ibid). Yet, a nuanced interplay exists, wherein the drive to appeal to customers and investors can unintentionally lead to the practice of impression management, engendering overly positive narratives within ICD in sustainability reports (Beretta et al., 2018). More needs to be known about the balancing act of disclosure beyond incentives such as legitimacy, financial advantages, and customer loyalty.

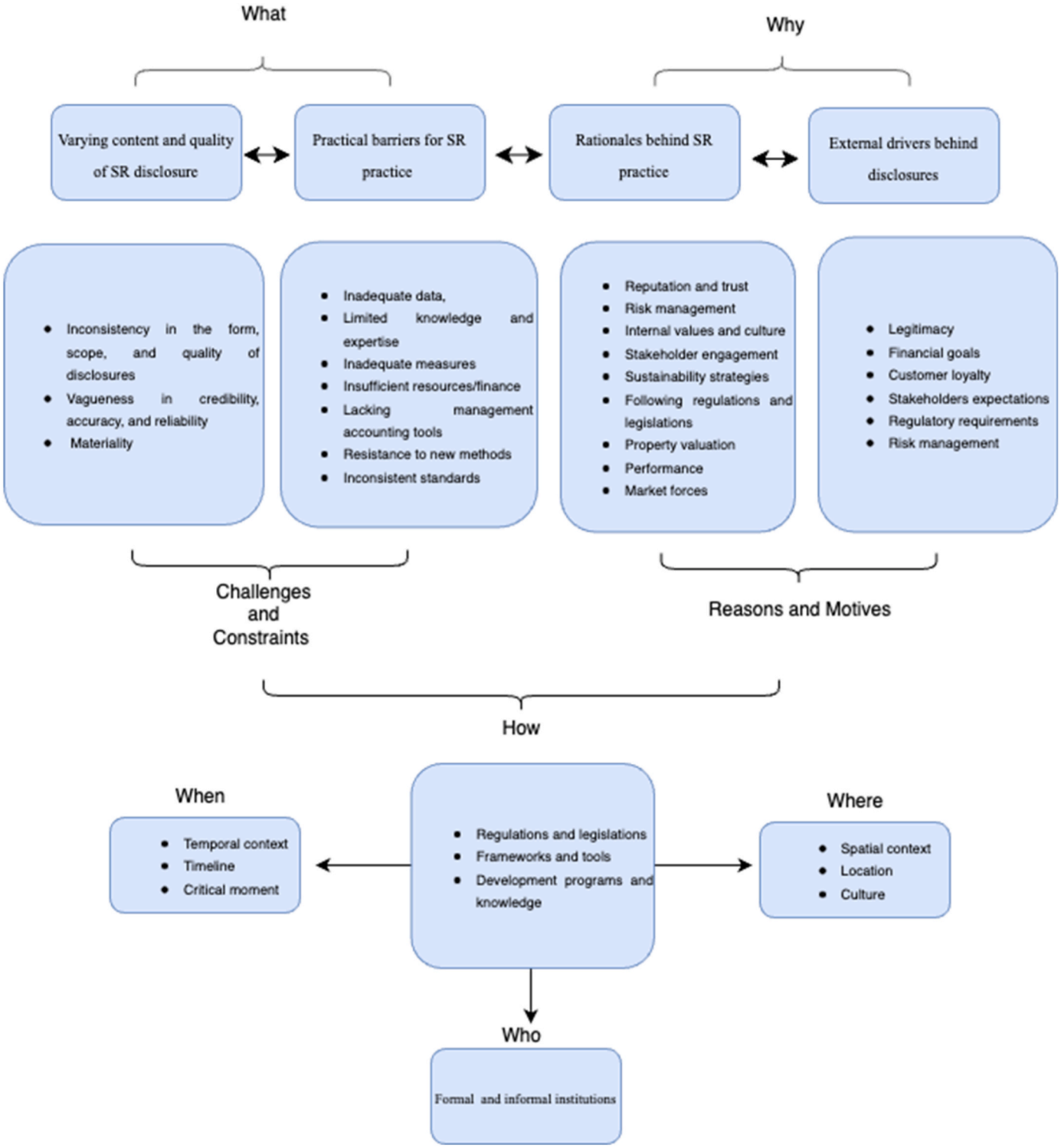

Fig. 3. Conceptual framework on Sustainability Reporting in the CRE sector.

Correspondingly, the study of Soysa et al. (2024) highlighted Reporting on SDGs achievement not only improves a company's image and risk management but also provides a competitive advantage in the global market. The study of An (2023) explains why City Developments Limited (CDL) engages in SR, highlighting its importance in decision-making, attracting sustainable finance, and aligning with global standards to enhance transparency, accountability, and long-term value creation.

5. Discussion on findings and development of conceptual framework

It is worth noting that CRE companies are progressively incorporating sustainability practices into their operational frameworks and reflecting these efforts within their reports, aiming to capitalize on reputational advantages and customer satisfaction. Corresponding to existing research on SR (mentioned in section 1), it has been found that research in the CRE sector also covers a variety of topics and perspectives. Some similar topics explored as before were stakeholders' engagement, materiality, and assurance, whilst new areas of investigation were performance, property and sustainability valuation, legitimacy, reputation, stakeholders' concerns, role of corruption and disclosure of anti-corruption information in SR, information infrastructure, business model and strategy reporting. In essence, the literature revolves around four main perspectives (explained in section 3.2) with diverse underlying concepts which are interlinked. For instance, in the literature, few studies illustrate that the *Varying content and quality of SR disclosure* are caused by *Practical barriers*. Likewise, some studies demonstrate the link between *Varying content and quality of SR disclosure* and *Drivers of external SR disclosures*. However, in practice, understanding the *Drivers of SR disclosures* is instrumental in achieving the *Rationales behind internal SR practice* as well as can help overcome the *Practical barriers*. Correspondingly the presence of *Practical barriers* and *Varying content and quality of SR disclosure* may lead to a reassessment of the initial *Drivers* and *Rationales*. Organizations might need to adapt their reporting strategies or revise their initial motivations based on the challenges they encounter. Overcoming challenges can enhance the organization's ability to meet its initial drivers and rationales more effectively. This means, there is a need for studies to show how these dominant perspectives are mutually interlinked and how they are impacting each other. This leads to develop a conceptual framework (Fig. 3) to synthesize the reviewed literature and articulate their conceptualization as well as adding suggestions for future studies.

Moreover, previous sections found that SR practices in the CRE sector are focused on work processes, activities, and information content and quality. The matter of *what* is disclosed gives rise to challenges and constraints, while the matter of *why* information is disclosed leads to reasons and motives for disclosure. To overcome the constraints, the reviewed literature suggests the path forward *how* to progress in disclosure, by government intervention and enhanced SR related regulations, innovative frameworks, tools, and development programs. Nevertheless, it was found that there exists a notable gap in research regarding other questions like "*when*", "*where*" and "*who*". These questions concern the institutional aspects shaping the practical implementation of emerging regulations, frameworks, and norms in the realm of sustainability, particularly within the context of the CRE sector.

The inclusion of facts in SR is different among organizations and countries, depending on their laws, regulations, and choice of reporting standards (Arvidsson & Dumay, 2022). It is not possible to apply a single sustainability solution for all countries, industries, and companies in the region because institutions, rules, social and cultural values vary widely and change over time (Utami and Barokah, 2024). Thus, the concept of SR regards different meanings and characteristics in different contexts, accordingly in various temporal spatial, and cultural contexts, the concept altered respectively (Rogers et al., 2014). For instance, in different phases of time, large companies made and published their SR in different ways and with different names such as Green Accounting, Social Accounting, Triple Bottom Line Reporting, CSR Reporting, Sustainability Reporting (SR) and Non-financial Reporting (Siew, 2016). These terms are often used interchangeably thus in this study the term SR has been used. This raises the question of *when* to be analysed focusing on timeline and critical moments that are significant to the sector. Accordingly, due to the requirements from regulators and standard setters the evaluation of SR undergone through various spatial and cultural phases (Lai and Stacchezzini, 2021) raises the question of "*where*" to be answered for studies in CRE sector. Spatial context reveals that globally, SR remains voluntary practice while in the European Union (EU) in 2018, it became a mandatory for large organizations. Even in the EU, companies began reporting at different times due to the voluntary nature of EU Directive 14. Some started shortly after its introduction, while others waited several years. Many proactive companies began SR even before the Directive was implemented. Besides that, it was also found critical that the literature on SR in the CRE sector should investigate the concerns regarding "*who*". This involves aspects such as the interplay between formal and informal institutions, emphasizing to distinguish between formal institutions (transnational and national regulations and standards, governmental legislations, and policies) on the one side, and informal institutions (cultural values, local traditions, norms, and social contracts) on another.

The importance of government interventions, regulations, and frameworks in shaping SR practice is definite. Existing general literature views institutional pressures as a main driver for organizational social performance, sustainability disclosures, and SR practices (De Micco et al., 2021). For example, organizations in highly regulated industries or subject to stakeholder pressure are more likely to disclose sustainability information (Hahn and Kühnen, 2013). Likewise, government policies, such as mandatory reporting requirements, can drive SR. It is evident that infrastructures driven by regulations are more developed than those that support non-legislative (Troshani and Rowbottom, 2024). However, the investigation into how these CRE companies navigate through the landscape of existing sustainability-related standards and regulations – such as the GRI framework, ISO 26000 standards, or specifically the NFRD – in their reporting practices remains limited (Hossain et al., 2018; Mavroulidis et al., 2022). There should be literature exploring the impact of regulatory initiatives on the adoption and quality of SR in the CRE sector and how CRE organizations respond to the evolving regulatory requirements. As Aureli et al. (2020), highlight how the transition from voluntary to mandatory non-financial information encouraged by EU Directive 2014/95/EU, leads to positive changes in corporate practices. According to them, companies utilize the new reporting obligations to improve their internal processes and strengthen their relationships with external entities that hold valuable resources. Consistently, research could be done to explore whether the situation is same in CRE.

Whilst the regulations depend on institutional environments and their enforcement (Christensen et al., 2021), their success also relies on informal institutions. If regulations diverge from prevailing informal national and organizational norms, they may not be perceived as essential (Bebbington et al., 2012), since cultural, socio-political, and religious norms significantly influence the extent of SR (Al Mahameed et al., 2021). Without external pressures or internal motivations, deinstitutionalization is likely as happened in Finland, when local authorities deinstitutionalized the water reporting practices due to insufficient external pressure (Vinnari and Laine, 2013). The presence of public and private regulations, norms, ethical practices, collaborative interactions, and shared beliefs shape social actions and guide corporate behaviours (Millar and Searcy, 2020). For their mutual benefit individuals and communities along with organizations create self-regulations to achieve the desired sustainability outcomes. Therefore, the way organizations report and communicate is strongly influenced by the constantly changing norms and values of society to ensure their societal legitimacy. Hence, CRE studies should extend their scope to include this

investigation.

Both, formal and informal institutions influence the SR practice and external SR disclosures. However, the influence can also go the other way. By changing the practices and disclosures, the companies adopt new practices that in turn may influence the cultural values of the reporters but also influence the future policies and regulations (Sabelfeld et al., 2023) through, for example, dialogue and consultation processes between the business organizations and the state. Thus, there is the need to not only investigate the effects of legislations and social contracts on corporate accountability and reporting practice but also how institutionalized behaviours and routines in specific sector (e.g., CRE sector) influence the ways are being rationalized in practice. Thereby, from the previous literature on SR in the CRE sector, the discussions related to the accounting-based accountability perspective were found, focusing on the effects of institutions on SR disclosures and practices. However, the perspectives of how accountability drives sustainability accounting and how institutions, internal SR practice, and external SR disclosures may mutually influence each other are found to be overlooked.

Taking a country as an illustration, Sweden is known for having some of the strictest climate policies in the world (Anderson et al., 2020; Karlsson, 2021). Sweden's strong social democratic governance and history of sustainability regulations deeply integrate the social contract into its culture (Cahan et al., 2016). For instance, the Swedish Environmental Code was introduced in 1999, to promote sustainable development and ensure a healthy environment for current and future generations (Enterprise, 2000), indicating Swedish companies likely have high-quality mapping and reporting of climate-related risks. Over and above, Swedish law exceeds what is required by the NFRD and narrows down the reporting requirements from 500 employees to having more than 250 employees, generating a net turnover exceeding SEK 350 million, and holding total assets surpassing SEK 175 million (Samani et al., 2022), CRE sector is not exempt. Likewise informal institutions play a significant role in shaping Swedish CRE activities. Rental sector dominance (Hyresrätt) underscores the importance of stability and affordability through rent controls, a practice deeply embedded in Swedish housing culture. This implies that *what* is disclosed and *why* it is disclosed exceeds the scope in many other countries highlighting the need for such examples as forerunners for guiding future practices. In brief, the "*when*" question considers the temporal context, "*where*" sheds light on spatial context, and "*who*" reflects the formal and informal institutions. In this regard, more needs to be known about organizational practices surrounding the disclosure of information.

To this end, the developed conceptual framework (Fig. 3) delineates the dominant perspectives and underlying concepts discussed in the preceding literature on SR in CRE and visualizes the links between different perspectives and needs of *when, where,* and *who*, to be explored, since, the conceptual framework describes the fundamental structure guiding the study (Ravitch and Riggan, 2016), and plays a vital role in establishing logical connections among the different aspects of the research design (Sitko, 2013). Thus, there is a need to call for more research in the sustainability accounting research domain to explore these interrelated links. Particularly, this study argues that exploring these links is important in the context of the CRE sector (as discussed above) to understand how the sector is adapting to the formal and informal institutions for effective monitoring and enforcement mechanisms to ensure the desired impact on its business and reporting practices.

To recapitulate, while multiple theories enhance the understanding of SR in the CRE sector, a single theory for instance institutional theory can specifically address the raised perspective of *who* and *why*. To explore the relationship between formal and informal institutions, institutional logics could be the theoretical lens to analyse how these institutions influence organizational behaviour, public policy, and economic development (Thornton et al., 2012). This theory suggests that individuals and organizations often adhere to different sets of beliefs, values, and norms, reflecting various institutional logics also impacting on *what, why, how* and by *whom* disclosure takes place.

Given that, the use of multiple theories together in reviewed literature reflects the multidimensional and complex nature of sustainability issues, which opens a possibility for theoretical triangulation (Hopper and Hoque, 2006). Interestingly, many studies are found to be inductive without using any theory, which can be an indication that the body of knowledge related to SR in CRE sector is still at the premature stage of development.

6. Conclusion

The CRE sector plays a vital role in shaping economies, providing essential infrastructure, and fulfilling the housing needs of communities worldwide. Despite extensive research into sustainability within CRE sector, there is a notable deficiency in comprehensive studies assessing SR within the sector. To the best of current knowledge, this study appears to be the first to combine previous research through a comprehensive literature review and leads towards following conclusions.

First, the findings reveals that the literature on SR in the CRE sector is interdisciplinary and published in both accounting and non-accounting journals. Second, there are four dominant perspectives: *varying content and quality of SR disclosure; practical barriers for SR practice; rationales behind internal SR practice; and drivers of external SR disclosures,* with diverse underlined categories. Third, the literature illustrates few links between these perspectives. However, it is argued to explore the interrelated links in all four perspectives. Fourth, the studies utilized few theoretical lenses, usually combining two or more theories, whilst most studies did not use any theoretical lens. Finally, it revealed that the institutional perspective has been neglected. The studies address *what, why,* and *how* questions while there is a need for further investigation of *when, where,* and *who*.

The study contributes significantly to both theoretical and practical implications. Theoretically, it sheds light on the significance of SR within the construction and real estate (CRE) sector and the interconnectedness of the construction and real estate (CRE) sector. By exploring the theoretical underpinnings of SR, the study underscores its importance in aligning organizational practices with sustainability goals and regulatory requirements. The outcomes of this research contribute to existing knowledge on accounting for sustainability as well as reveals potential areas for future investigation. This study illuminates the views of how accountability drives sustainability accounting and how formal and informal institutions, may have an interrelated reinforcing effect. The results of this review illuminate the critical concepts and perspectives relevant to SR in the CRE sector, hence contributing fresh insights to what is currently studied. Practically, this study enhances SR research by extending sectoral analysis and offers a thorough examination of the present status of SR in the CRE sector. It provides valuable intuitions towards the hurdles and motivations surrounding the adoption of sustainability practices and reporting. The findings and conceptual framework are invaluable for transdisciplinary action research and academic communities for future research in the interdisciplinary field of accounting and management of sustainability. Practitioners can utilize the suggested SR evaluation criteria to embed SR within their organizations, validate their sustainability strategies, and leverage SR tools and incentives effectively.

7. Limitations and opportunities for future research

While the study offers valuable contributions and insights, there are some limitations of study and the methodology adopted. Firstly, the search was confined to two databases, which may have restricted the breadth of the findings. Future studies could expand the number of databases. Secondly, the selection criteria for journals were limited to peer-reviewed articles in English, potentially impacting the geographic diversity of the results. Thirdly, the choice of keywords was informed by

previous seminal studies, incorporating additional keywords could broaden the scope of the review to encompass related topics. Fourthly, the research explores the literature about interconnected sector (CRE) while the text points out that research related to SR has predominantly focused on sectors such as mining, energy, and banking. This opens an opportunity for future research to conduct comparative analysis between these sectors and the CRE sector, investigate similarities and differences related to structures, strategies, trends shaping SR disclosures, as well as challenges, and impacts of SR implementation in practice. Such analyses can highlight transferable practices and strategies for effective SR within the industries. Finally, there exists a notable gap in research concerning how regulation and accountability shapes SR. Thus, a suggestion for future research is to investigate the impact of regulatory initiatives on the adoption and quality of SR. Related to this, it is interesting to explore how organizations respond to evolving regulatory requirements and how the underlying cultural norms and values shape these responses.

CRediT authorship contribution statement

Hira Shahid: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Lana Sabelfeld:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Investigation, Formal analysis, Conceptualization. **Jeaneth Johansson:** Writing – review & editing, Writing – original draft, Validation, Supervision, Funding acquisition, Formal analysis.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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