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CIRCULAR ECONOMY KNOWLEDGE MANAGEMENT INITIATIVES IN THE AUSTRALIAN CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT SECTOR

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ABSTRACT

Circular Economy (CE) implementation has been identified as a key solution in addressing the issue of Construction and Demolition (C&D) waste generation. However, the lack of CE knowledge among designers in the construction industry impedes CE uptake for C&D waste management. Although existing studies emphasise the importance of CE Knowledge Management (KM) as a key enabler to equip designers with CE knowledge to manage C&D waste, there remains limited research outlining the specific KM practices needed to achieve this in practice. Therefore, this study investigates the current CE KM initiatives in the Australian C&D waste management sector to understand the landscape of CE KM of designers. Nineteen semi-structured expert interviews were conducted with designers and were analysed using reflexive thematic analysis. The findings indicate current CE KM initiatives to be fragmented and mainly focused on KM activities supporting knowledge sharing: primarily delivered through professional association courses, seminars, and workshops. This exposed a notable misalignment between knowledge sharing and knowledge acquisition, revealing low knowledge acquisition by designers. The need for knowledge creation, evaluation, and documentation initiatives to support designers in the CE application is thus identified, whilst demonstrating that current initiatives are primarily reactive – generally emerging in response to regulatory requirements. These findings assist designers and policymakers in targeting improvements in the CE KM practices, addressing gaps, and leading to enhanced implementation of C&D waste management practices. By framing the CE KM landscape for Australian designers, this study contributes to Sustainable Development Goals (SDGs) 04 and 08.

Keywords: *Circular Economy; Construction and Demolition Waste; Designers; Knowledge Management; Waste Management.*

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1. INTRODUCTION

Waste is defined as any material that the holder discards, as it no longer serves a functional purpose in production, transformation, or consumption processes (Circle Economy, 2025). C&D waste denotes the subset of such waste generated in the construction processes. The construction industry is responsible for around 2-3 billion tons of construction and demolition (C&D) waste generated annually, contributing to around 25-30% of global waste generation (Sakthibala et al., 2025). When it comes to the Australian context, the construction industry generates approximately 29 Mt of waste materials annually, accounting for around 39% of the nation's waste generation (Coreo, 2025). At present, a large portion of C&D waste ends up in landfills, creating severe environmental and social challenges (Purchase et al., 2022), ratifying the need for improved C&D waste management approaches. Waste management refers to the practices of avoiding, reducing, reusing, recycling, recovery, treatment and disposing of waste using a high-to-low priority order known as the waste management hierarchy (NSW Environment Protection Authority, 2022). Despite the existence of numerous measures aimed at managing C&D waste, it remains inadequately managed in both global (Petrović & Thomas, 2024) and Australian contexts (Coreo, 2025).

Circular Economy (CE) has gained attention in the construction industry as a promising solution to reducing the environmental impacts of construction activities (Sun et al., 2025). It is an economic system designed to minimise waste and pollution, enhance effective resource consumption and regenerate the natural environment (Ellen MacArthur Foundation, 2016). Therefore, as conveyed in the definition above, it extends beyond the existing waste management hierarchy, intending for the regeneration of the natural environment. As a solution to managing C&D waste, CE provides a variety of benefits (Mahpour, 2018) including: natural resources protection, minimising illegal disposal, landfill diversion, and maximising financial benefits through material reuse (Swarnakar et al., 2025). However, the adoption of CE for C&D waste management remains limited within the construction industry. For example, (Circle Economy, 2025) states that globally, only 22% of C&D-generated waste is diverted from landfill. Further, despite potential for diversion to high-value streams, most of the C&D waste is used for low-value applications such as backfilling (Circle Economy, 2025). Similarly, in Australia, there is a notable misalignment between reported and actual landfill diversion rates in C&D waste. While some projects claim diversion rates exceeding 90%, outcomes in certain cases are found to be as low as 14% of waste recovery (Coreo, 2025).

This limited adoption of CE for C&D waste management derives from a range of barriers, including environmental, economic, cultural, organisational, technical, regulatory constraints and knowledge (Gherman et al., 2023; Wuni, 2023). Lack of CE knowledge is identified among the top three barriers for the Australian construction industry (Shooshtarian et al., 2023), which exerts influence on all the aforementioned barriers, narrowing perceived options, limiting stakeholder engagement, and constraining effective implementation of CE practices for C&D waste management (Koralage et al., 2024). Further, Wuni (2023) promotes knowledge as the topmost driver for construction industry CE adoption. Existing studies reflect this position, highlighting the importance of CE Knowledge Management (KM) in improving industry C&D waste management practices (Koralage et al., 2024; Oluleye et al., 2022). Borrowing from Koralage et al. (2024) and Evans et al. (1993), this study considers KM as a cyclical process encompassing the activities of knowledge creation, acquisition, documentation (organising and storing), application, evaluation and sharing. In investigating CE KM, design team professionals were considered as prominent stakeholders due to their ability to influence material selection decisions that affect waste generation and management (De Marchi & Di Maria, 2020). Further to the authors, their role in advancing CE KM is significant, particularly during a project's preliminary phases, where such contributions can help mitigate end-of-life environmental impacts (De Marchi & Di Maria, 2020). However, Adams et al. (2017) revealed that designers, whilst one of the most influential construction project practitioners, were frequently the least informed on CE implementation.

Existing studies frequently mentioned the importance of CE knowledge and KM for enhancing C&D waste management practices. Further, there are very limited studies that initiated efforts in CE KM in Australia. For example, Sun et al. (2025) identified information-sharing barriers for CE adoption in construction projects and provided factors limiting information sharing, derived from a case study. While this study provides insights regarding factors hindering knowledge sharing, it does not explore knowledge sharing and KM practices to be enabled in detail. Nadeetharu et al. (2026) identified CE knowledge requirements for designers to effectively manage C&D waste; its scope is limited to specifying what knowledge is necessary, rather than explaining how that knowledge can be managed in practice. Moreover, the Department of Climate Change (2024) conveyed collaboration as a necessary step to enable knowledge exchange; however, it is also limited in its scope to convey the CE KM landscape of the Australian C&D waste management sector. Thus, there is a dearth of studies that investigated the current landscape of CE KM initiatives in the Australian construction context whilst covering the KM cycle's multiple dimensions.

This study, therefore, aims to investigate such CE KM initiatives- focusing upon the Australian C&D waste management sector- seeking to depict and interpret the landscape of CE KM of designers. The scope of this study is limited to commercial building projects in Australia, where CE adoption is marginal, and with awareness that expert availability is currently limited outside of this sector. According to (Coreo, 2025) commercial construction projects in Australia generate an average of 128 kg/m^2 of waste materials, being one of the topmost project types that need to be circular. Further, a study by Nadeetharu et al. (2026), also articulated that most of the current CE efforts are centred on commercial settings, allowing the feasibility of data collection. The upcoming section describes the adopted methodology, followed by chapters covering the findings, discussions, and a summary of our conclusions.

2. RESEARCH METHODOLOGY

This study employs a qualitative research methodology. Widely acknowledged as the most appropriate approach for exploring individuals' subjective experiences, it enables the capture of perspectives and beliefs generally missed by quantitative approaches (Sun et al., 2025). Semi-structured expert interviews were developed for data collection due to their potential for obtaining rich and detailed information through the researcher's interactive participation (Ahlin, 2019). The interview questions were designed to unveil multiple perspectives on current circular economy (CE) knowledge management (KM) initiatives covering different steps of the KM cycle. Nineteen such interviews were conducted with CE experts in the Australian construction industry. Data saturation was reached after 16 interviews, as no new themes emerged at that stage. Nevertheless, three additional interviews were undertaken to validate and confirm the point of saturation. Interviewees were selected based on the criteria of holding a minimum of five years of industry experience and at least two years of CE or construction and demolition (C&D) waste management experience. In selecting interviewees, consideration was also given to ensuring the multiple professions within a design team were covered. Design team role definitions followed those of the Building Designers Association of Australia (Building Designers Association of Australia (BDAA), 2024) with the chosen expert profiles offered in Figure 1. Potential participants aligning with the above criteria were identified from publicly available company websites, LinkedIn profiles and CE groups, and initially contacted with a plain language statement describing the research project, consent from and withdrawal of consent form. Judgmental sampling was used in data collection as it is considered ideal for exploratory research design, low cost and less time-consuming (Taherdoost, 2016). To ensure anonymity, respondents were allocated a unique code (R-01 to R-19).

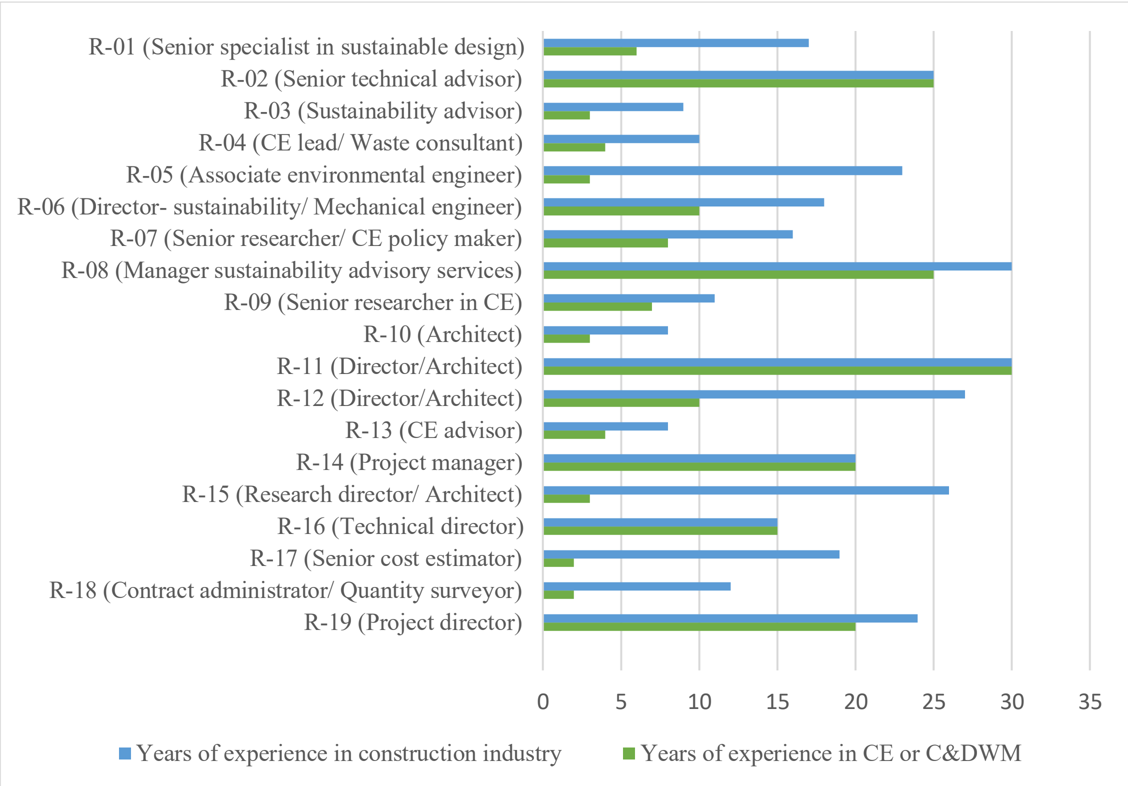

Figure 1: Profile of experts participated in the semi-structured interviews

Ultimately, all respondents exceeded the selection criteria with more than eight years of construction industry experience and two years of CE or C&D waste management experience. Interviews were conducted and recorded using Zoom with the written consent of interviewees. The resultant auto-generated Zoom transcripts were then manually reviewed and verified to ensure accuracy. Data was considered acceptably saturated after 16 interviews; however, three additional interviews were conducted for surety. This study received ethical approval from Deakin University (Approval Nr.: 2024/HE000532).

Reflexive thematic analysis, as outlined in Byrne (2022), was chosen as the most appropriate means of deciphering the obtained data. Consisting of six steps, this approach covers the following: 1. Data familiarisation and note-taking; 2. Systematic coding of data; 3. Identifying initial themes; 4. Reviewing and expanding themes; 5. Refining, defining and naming themes, and 6. Writing (Byrne, 2022). Following this method, the raw transcripts were thoroughly reviewed initially to familiarise, and appropriate phrases were coded to the six steps of the KM cycle (creation, acquisition, documentation, application, evaluation and sharing). The identified phrases were revisited to identify initial themes and iteratively cross-verified with transcripts to expand and identify final themes. This method is allowed for and appropriately exposes the researcher's active role in data interpretation. NVivo 15 was also deployed as a coding interface, enabling researchers to handle large amounts of data and identify and organise patterns (Castleberry & Nolen, 2018).

3. RESEARCH FINDINGS

This study identifies circular economy (CE) knowledge management (KM) initiatives following the steps in the KM cycle, as shown in Figure 2.

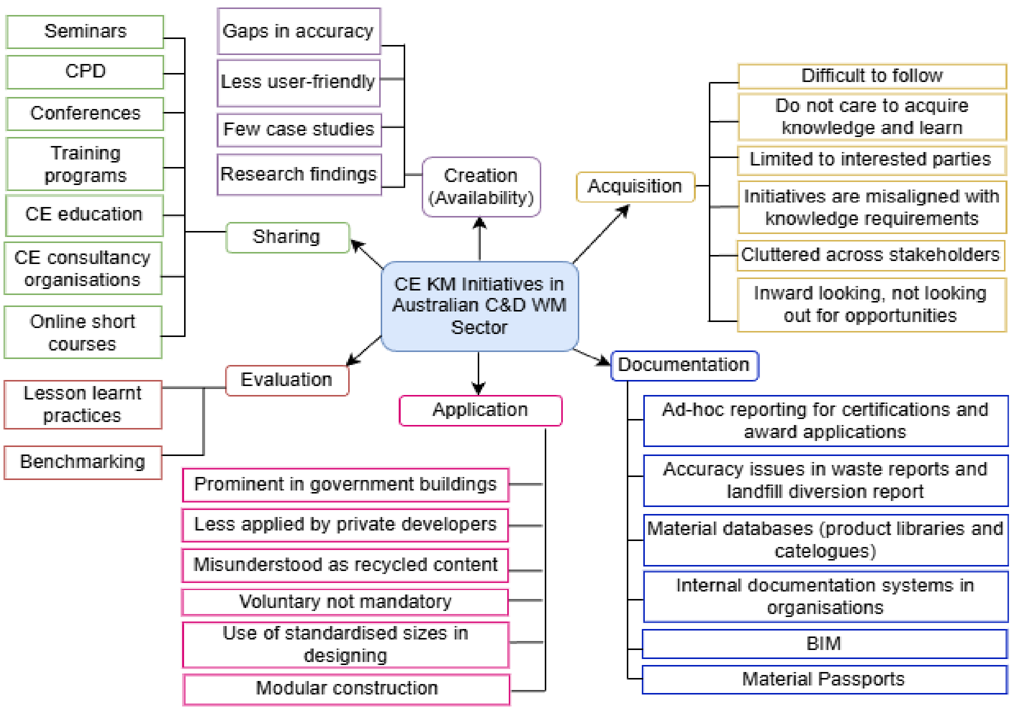

Figure 2: Current circular economy knowledge management initiatives in the Australian construction and demolition waste management sector

Notably, respondents unanimously acknowledged the need for CE KM initiatives. In itself, this highlights a significant CE knowledge deficiency amongst Australian construction industry design professionals (R-01: R-19). However, respondents emphasised that there are plans to advance CE KM in Australian construction and demolition (C&D) waste management through innovative research projects (R-15) and CE frameworks (R-14). The following sections discuss these initiatives, as presented in Figure 2, in more depth.

3.1 AVAILABILITY OF CIRCULAR ECONOMY KNOWLEDGE

Contradictory views were expressed by respondents regarding circular economy (CE) information availability for designers to plan construction and demolition (C&D) waste management into their projects. Three out of 19 respondents claimed there is plentiful CE information adaptable and relevant to the Australian construction industry. Conversely, two of the respondents suggested a significant dearth of suitable CE information and knowledge. This left the majority (10 out of 19) of respondents reporting an intermediate view, suggesting information gaps, particularly in relevant formats (R-05, R-10), accuracy (R-03, R-04), and user-friendliness (R-09, R-13). This lack of user-friendliness, expressed in Figure 2, was reported as resulting in substantial time consumption when referring to documents and so inhibiting adoption of existing knowledge (P-11). More user-friendly formats of available knowledge were thus being called for. In addition, respondents were uncertain of where to find information and the trustworthiness of CE knowledge sources (R-01). Furthermore, the substantial cost of the information resources, often behind association paywalls, discourages designer engagement despite availability (R-01). Thus, there is a necessity for improved databases easily and freely accessible to practitioners in the design fields. Notably, participants (R-03 and R-04) highlighted the importance of access to relevant case-based, real-world information rather than abstract theory, something significantly lacking in the construction industry.

3.2 CE KNOWLEDGE SHARING INITIATIVES

All the respondents agreed on the availability of initiatives for CE knowledge sharing in the Australian construction industry. For example, R-02 disclosed, *"I am surprised how most of the industry is kind of happy to share that (CE) information. It is quite interesting"*. Seminars and conferences are two popular initiatives to share CE knowledge in the construction industry. In addition to knowledge sharing initiatives focused on a wider range of professionals, there are knowledge sharing initiatives focused internally on the employee level at organisations (R-01, R-04). However, attendance to these initiatives is generally limited to the design professionals how are already interested in CE (R-08), providing limited accessibility to knowledge. CE education for entry-level professionals and CE-focused Continuing Professional Development (CPD) programs for existing professionals in the industry are considered two formal approaches for knowledge acquisition and dissemination of CE knowledge. However, CPDs focused on CE are limited in the present construction industry (R-06), which is unevenly target on different professionals comprising the design team (R-18). This is potentially due to the absence of robust regulatory frameworks mandating compliance with CE practices in construction and demolition (C&D) waste management. As CE principles are typically adopted in response to regulatory requirements (R-03), the lack of mandatory regulations can diminish the need for CE-trained professionals.

CE education (refer to Figure 2) is positively attributing in the Australian construction industry as an initiative for the dissemination of knowledge, as there are a few Australian universities recently started CE courses (R-06). However, R-15 claimed that it is embedded only as a part of the learning outcome, not as a core unit. Further CE educational programs should expand to prioritise targeting different professionals, like waste contractors, who are physically dealing with waste (R-03). In addition, it needs to expand CE education beyond university level, as there are few initiatives for that at present (R-07, R-15). Seven out of 19 comment on CE consultation, presented in Figure

2 as a current supportive initiative to disseminate CE knowledge to industry professionals to apply CE to manage C&D waste. R-08 appreciates the current consultation and also emphasised the importance of commenting on the financial benefits of waste management, as the industry is driven by profits instead of prioritising environmental considerations. However, the cost associated with hiring a CE consultant hinders the effective use of their knowledge in construction projects to manage C&D waste (R-10).

3.3 INITIATIVES FOR CIRCULAR ECONOMY KNOWLEDGE ACQUISITION

Despite the availability of circular economy (CE) knowledge and knowledge sharing, eight out of 19 respondents claimed that the acquisition of CE knowledge by design team professionals was quite low. Lack of interest, as presented in Figure 2, is one of the reasons impeding knowledge acquisition. For example, R-13 explains that "*it's not hard that knowledge is out there (...). So, if somebody gave literally the tiniest (effort), they could Google it and find out (a) bunch of stuff today*", conveying that professionals do not care to learn about CE. This limited interest in professionals causes limited connectivity with others interested in CE, which is referred to as "an echo chamber" (R-08). Therefore, stakeholder networking needs to be further expanded, especially to contractors (R-07) and clients (R-05), encouraging more knowledge sharing among those stakeholders.

Another reason for the lack of knowledge acquisition is the less emphasis on formal qualifications placed in the Australian construction industry, provided that the required tasks are completed satisfactorily (R-18). This lack of momentum from the industry might be a reason for the indifference in knowledge acquisition, compared to knowledge availability and sharing. Financial constraints are also a reason for the lack of knowledge acquisition of design professionals, as there is limited freely available, trustworthy knowledge. R-01 claimed that the accuracy of freely available knowledge is difficult to verify, which limits professionals from acquiring new information. Another reason for limited acquisition is the misalignment of available knowledge with the specific needs of the design team professionals (R-04) (refer to Figure 2). Further to R-04, design professionals in the Australian construction sector place greater value on experiences, including real-world best practices and pitfalls, which are currently insufficiently available. Nevertheless, there are adequate CE information sources available, and this abundance creates challenges in determining appropriate entry points and identifying relevant and credible sources (R-13).

3.4 INITIATIVES FOR APPLICATION OF CIRCULAR ECONOMY KNOWLEDGE

Modular construction (R-16), relocatable stages and temporary housing arrangements in festivals (R-13), use of standardised sizes of materials when designing (R-14), reusing construction and demolition (C&D) waste in its exact form (metal lift cables used as an elephant enclosure in the Zoo) (R-08), and use technologies like Virtual Reality (VR) and 3D printing in the building survey stages to determine potential waste (R-19) are mentioned as current circular economy (CE) application initiatives in Australian construction industry suggesting positive trend towards CE application. However, 10 out of 19 respondents claimed that most of the CE applications in the current context are merely to achieve "Green star", or to "protect heritage listed site". Further, this application sometimes leads to "greenwashing" (R-12) with limited disclosure and highlights the need for an internally driven application with a purpose. Despite architects and design teams taking efforts to reuse existing building materials in new developments and extension projects as an initiative for CE implementation (R-17), CE is still commonly misunderstood by clients as being limited to the "use of recycled content" (R-06), as stated in Figure 2. This misunderstanding contributes to its restricted adoption, as clients often express concerns regarding the quality of recycled materials. Additionally, the application of CE in construction projects remains limited among private developers, as they perceive such initiatives are associated with a heightened level of risk and consider them to be a "guinea pig". In contrast, as stated in Figure 2, government-funded buildings, including university projects, are taking the initial steps and undertaking the associated risks, which is essential for creating success stories that can encourage CE adoption among private investors (R-04).

3.5 INITIATIVES FOR DOCUMENTATION OF CIRCULAR ECONOMY KNOWLEDGE

Although few initiatives for the documentation of circular economy (CE) practices exist, the majority of respondents characterised these efforts as inadequate and largely ad hoc, as stated in Figure 2. External drivers, including awards, have been identified as a key reason for documenting CE practices in current construction projects (R-03, R-15). Consequent to this responsive nature to external mandatory requirements, regulations have been identified as the most prominent way to enable documentation of CE practices regarding construction and demolition (C&D) waste management in construction projects (R-18). Another documentation approach that needs to be improved in construction projects is the material libraries (R-13) (Figure 2), as the validity of current directories remains difficult to verify (R-02). This validity needs to be improved via an independent third-party, as according to R-08, "*it (material directory) cannot come from the government because they are not allowed to show preferences to any commercial people*". The role of digital technologies in improving documentation of CE practices was also highlighted as an important documentation initiative. As stated in Figure 2, Building Information Modelling (BIM) software is a current initiative to identify "*where the wastage is"* (R-10). It has a limited adoption in the construction industry (R-02). One of the potential reasons for this is the sophisticated nature of the software (R-11), which suggests the need for more education regarding software use. "Material passports" (R-05) and "building passports" (R-02, R-13) were two other initiatives that need to be expanded, incorporating all products and services data into a centralised system.

3.6 INITIATIVES FOR EVALUATION OF CIRCULAR ECONOMY KNOWLEDGE

Current initiatives for evaluating circular economy (CE) knowledge of designer professionals are considered very limited in the Australian construction industry, irrespective of the profession (R-07). As stated in Figure 2, lesson learnt practices (R-19) and benchmarking (R-15) have been identified as two initiatives for evaluating CE knowledge, which still need to be expanded. Although the capturing of lessons learned has long been a recognised practice within the construction industry, its uptake remains limited due to time constraints (R-02, R-06). R-08 supported this view explaining that "*as an industry, everything novates so fast, then they (project team members) get to the end of a project, and they don't capture, or they might capture lessons learned, but they don't bring it back to the start of the next project, because they've already rushed off to another project*". Establishing a work ethic to prioritise the importance of applying lessons learned can help mitigate these time-related barriers (R-19).

Lack of benchmarked guidelines or criteria to evaluate current knowledge for design professionals in the construction industry is identified as a limitation of current knowledge evaluation initiatives, which impedes designers from tracking knowledge (R-05). Therefore, there is a need for a consistent set of criteria for professionals to measure their CE practices (R-01). Furthermore, R-07 explained that this lack of evaluation impedes the practical application of CE for construction and demolition (C&D) waste management, as professionals in the construction industry, despite possessing distinct skill sets, tend to operate within isolated perspectives, as there are limited opportunities for collective analysis and the effective integration of knowledge on shared grounds. Similar to documentation, evaluation of lessons learnt in CE applications is also happening on an ad-hoc basis only if it is essential in the immediate project (R-02). In addition, due to the fragmented and complex nature of the construction industry, there is no designated custodian responsible for the evaluation and protection of CE data (R-06). This absence represents a pressing issue that requires urgent attention.

4. DISCUSSION

The Australian construction industry has few of the circular economy (CE) guidance plans, which can also be used by designers to contribute to managing C&D waste (Barner et al., 2024; Department of Climate Change, 2024). Despite the positive growth in CE knowledge management (KM) initiatives in the Australian construction and demolition (C&D) waste management sector, the findings of this study reveal the requirements for extensive revisions, updates and a structured approach to ensure their effectiveness, covering multifaceted areas of KM. This includes increasing adoption of documentation of CE practices, evaluation and purposeful dissemination of CE knowledge, in addition to the mere sharing of knowledge, which is the current practice.

CE knowledge sharing is increasing in the Australian construction industry, which contributes to closing the data sharing gaps for CE highlighted by (Adams et al., 2017; Mahpour, 2018; Sun et al., 2025). However, the findings of this study conveyed that current knowledge-sharing initiatives are identified as misaligned with the knowledge requirements of design professionals, limited only to interested parties, cluttered and difficult to follow. This can be due to a lack of in-depth understanding of knowledge requirements targeting different design professionals at the industry and at different education levels. Therefore, CE knowledge assessment tools are required to be utilised by universities, professional accreditation bodies, industry organisations and policymakers to gain a detailed understanding of knowledge areas, targeting sharing. Share with a purpose (structured dissemination of knowledge) also needs to be empowered as a vision of CE knowledge sharing, rather than mere transfer of information, by ensuring recipients clearly understand the rationale and significance underlying the knowledge being communicated.

Insufficient information on materials and methods related to CE implementation has identified as a needed area for improvement, which aligns with the findings of Gherman et al. (2023) who conveyed a lack of information as a barrier hindering CE adoption for C&D waste management. Therefore, enhancing the engagement of supply chains with CE reporting is required to enhance the reliability of material information. The findings suggest a positive attitude of design professionals to real-life examples in contrast to theoretical knowledge, with increased sharing of tools and techniques, best practices and lessons learned practices. Oluleye et al. (2022) similarly highlighted this knowledge requirement in their study, unveiling the necessity for a CE best practices framework incorporating tools, guidance and standards for C&D waste management. However, the empirical findings expand this requirement by emphasising the importance of making such best practices frameworks accessible through case studies and real-life examples. Therefore, the government could lead in implementing CE demonstration projects for the wider construction industry, especially conveying lessons learned practices.

Existing studies of Gherman et al. (2023) and Purchase et al. (2022) revealed a lack of education opportunities for construction professionals on CE. However, empirical findings in contrast convey that there is positive progress towards CE education in the Australian context, which is also similarly conveyed by Barner et al. (2024). Yet, this study conveys that these available initiatives are more focused on sustainability than CE, limited to a few design professions like architects and are primarily at the university level. Instead, these initiatives should be expanded towards the vocational education and training (VET) sector (TAFE and private registered training organisations [RTOs]) and should focus on a wide range of professions (eg: cost management, contract administration, procurement and engineering). Cost being a key barrier for CE uptake in the Australian construction industry Feldman et al. (2024), focus on CE education and career development of cost managers and quantity surveyors, should be considered a priority. While CE consultation is being initiated in Australia, it should be expanded specifically to the construction industry and communicate the financial benefits of C&D waste management to motivate clients to adopt CE practices. Australia's Waste[d] Opportunity report (Coreo, 2025) initiated a similar initiative, and there is a need for more trustworthy initiatives in the future. Cost managers and quantity surveyors need to take priority in this regard; therefore, enhancing their CE knowledge is vital. This sharing of financial benefits will contribute to addressing one of the topmost barriers identified by Mahpour (2018) which is an inadequate understanding of the benefits of CE in C&D waste management.

Despite the availability of industry bodies focusing on CE, including the Green Building Council of Australia and Sustainability Victoria, empirical findings reveal the need for structured CPDs from professional accreditation bodies covering all professions, which is lacking in the current context. Even though Australia's CE framework (Department of Climate Change, 2024) conveys the credibility of building codes to incorporate circularity, the experts, in contrast, claim that CE has not been adequately incorporated into the National Code of Construction (NCC). This can be an important background initiative to enable designing for C&D waste management using CE, as current voluntary requirements for CE are not effective. Elaborating on the view of Swarnakar et al. (2025), who conveyed digital technologies as a key driving factor for CE implementation for C&D waste management, empirical findings confirmed the positive role of digital technology in CE KM in addition to the application of CE practices. This study further confirmed that documentation feasibility as an additional benefit of digital technologies. As the respondents highlighted the role of digital technologies in documentation and explained the sophistication of available software, software developers can work on introducing more CE-friendly document management systems to centralise all building data. Concurrently, enhancing the technological knowledge of construction professionals is required to prepare them to adopt and utilise software effectively.

5. CONCLUSIONS, LIMITATIONS AND FURTHER RESEARCH DIRECTIONS

This study focused on identifying current circular economy (CE) knowledge management (KM) initiatives to enhance CE knowledge of designers to manage construction and demolition (C&D) waste in the Australian construction industry. The results indicated the limited availability of initiatives and a cluttered KM approach mainly focused on knowledge sharing. The gap is noted in organisational and independent professional knowledge acquisition compared to knowledge availability and sharing. The application of CE knowledge needs expanding as it currently occurs on an ad-hoc basis, mainly limited to government-funded large-scale projects, with a few voluntarily led C&D waste minimisation initiatives. Thus, there is a need for more structured initiatives to systematically create, evaluate and document CE knowledge; it being shown that existing efforts are generally reactive, primarily driven by regulatory compliance requirements associated with certifications or awards. The study's findings also serve as guidelines for policy makers, enabling policy formulation addressing multiple perspectives of KM, design organisations and professionals. Through this, opportunities are afforded for new CE KM initiatives, business opportunities, expanded educational curricula, and professional accreditation body Continuing Professional Development (CPD) programs. The findings also serve Sustainable Development Goals (SDGs) 04: advancing education and SDG 08: green economic growth by contributing to enhancing CE knowledge of design professionals, thereby implementing CE practices and reducing C&D waste.

As with all research, there are a few limitations to this study. The first lies in its focus on the Australian context. However, this is also a key strength in that it allows for the generation of context-specific insights. These findings not only contribute uniquely to the Australian C&D waste sector but also serve as a reference for other countries, supporting comparative investigations and assisting in the identification of potential challenges during the early stages of similar initiatives. Secondly, there can be a response bias based on the experts selected, despite the measures followed to minimise it, like data saturation. Thirdly, this is a cross-sectional study of CE KM initiatives; however, knowledge is a temporal domain that benefits from longitudinal studies to explore CE KM behaviour over time. This study will be expanded in the future to identify potential causes for gaps in CE KM initiatives and propose strategies to overcome them. Future studies can focus on a stakeholder analysis to identify powerful and influential stakeholders to address the limitations of current CE KM initiatives, investigate perspectives of other professionals in the construction industry, and rank the effectiveness of current CE KM initiatives based on larger industry populations.

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