

# A Summary of Recent Studies Published by DIU Researchers



The researchers of Daffodil International University (Faculty, Students, Alumni) have conducted a number of research projects related to SDG 12 (Responsible Consumption) and results of the projects have also been published as research papers in various international reputed peer reviewed and Scopus indexed journals. A summary of the research publications related to SDG 12 are given below:

**1. Effect of abrasion and chemical treatment of recycled aggregate on the workability, strength, and durability properties of concrete**

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[European Journal of Environmental and Civil Engineering](#), Volume 26, 2022 - Issue 8

<https://doi.org/10.1080/19648189.2020.1797886>

**Abstract**

Different treatment strategies have been explored in a quest to improve the properties of recycled aggregate concrete (RAC). The improvement strategies are directed towards the removal of residual layers of old mortar on the recycled coarse aggregate (RA). The removal of old mortar layer improves the bond between the new mortar and the RA that makes the quality of RAC better.

Efforts have been made to remove the old mortar from the surface of the RA through abrasion process, however, there is a lack of detailed information, particularly about the beneficial effect of abrasion coupled with some chemical treatment. In the present work, the performance of RAC prepared with the RA subjected to abrasion (with the help of a Los Angeles abrasion test machine) was evaluated. The combined effect of abrasion and sodium silicate treatments of the RA on the fresh and hardened properties of RAC was also evaluated. A significant improvement in the workability, strength, and durability of RAC was noted due to abrasion treatment of the RA. Strength and durability of RAC increased significantly due to the combined effect of abrasion and sodium silicate treatment of the RA.

Keywords:

- [Recycled aggregate](#)
- [recycled aggregate concrete](#)
- [abrasion treatment](#)
- [sodium silicate treatment](#)
- [workability](#)
- [strength](#)
- [durability](#)

## **2. Strategies for Enhancing Construction Waste Recycling: A Usability Analysis**

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## **Abstract**

Prior works have suggested various strategies to increase construction waste recycling (CWR) rates. However, choosing the strategies is challenging without a lateral comparison. Therefore, this study aims to compare the usability of various strategies that target the enhancement of CWR implementation. To achieve this purpose, thirteen CWR enhancement strategies were identified from a systematic literature review. Then, questionnaire survey data were collected from 106 construction project managers. The collected data were analyzed via mean score ranking, normalization, overlap analysis, agreement analysis, and factor analysis. Additionally, the data were analyzed using a proposed formula for computing usability indexes using the cost, easiness, and effectiveness values. The results show that three strategies have high usability indexes: organize temporary bins in each construction zone, identify construction activities that produce recyclable materials, and enhance company policies related to CWR. These strategies with high usability indexes are consistent with the overlapping cheap, effective, and easy strategies. This study provides researchers and practitioners with optimal strategies for enhancing CWR implementation. Effective CWR enhancement strategies can improve CWR rates in construction projects. Future researchers can also adopt this study's approach in computing usability indexes through questionnaire surveys.

*Keywords:* [construction industry](#); [sustainable development](#); [sustainable construction](#); [decision making](#); [construction waste recycling](#); [usability analysis](#)

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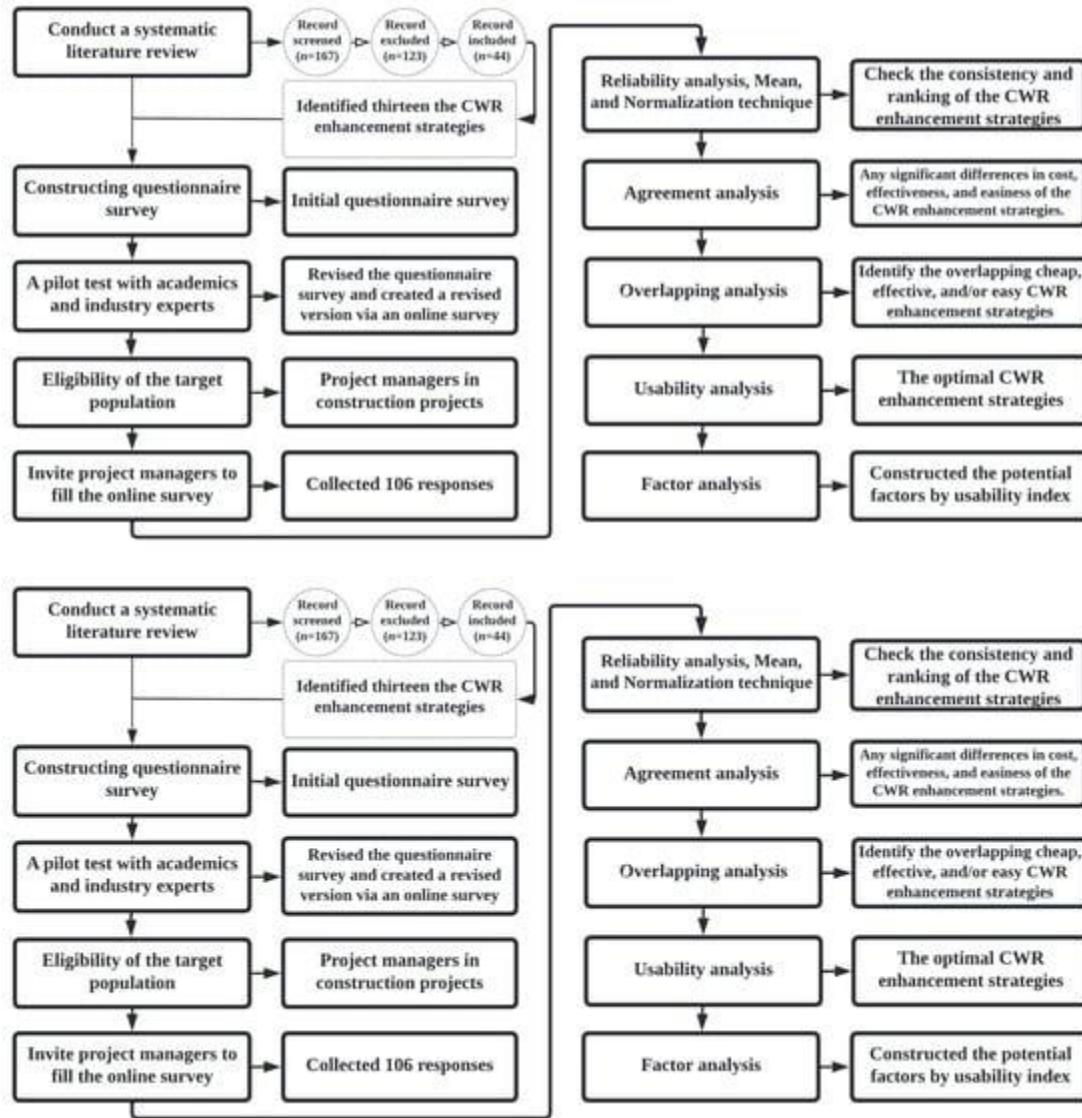


Figure 1

### 3. Critical Success Factors for Concrete Recycling in Construction Projects

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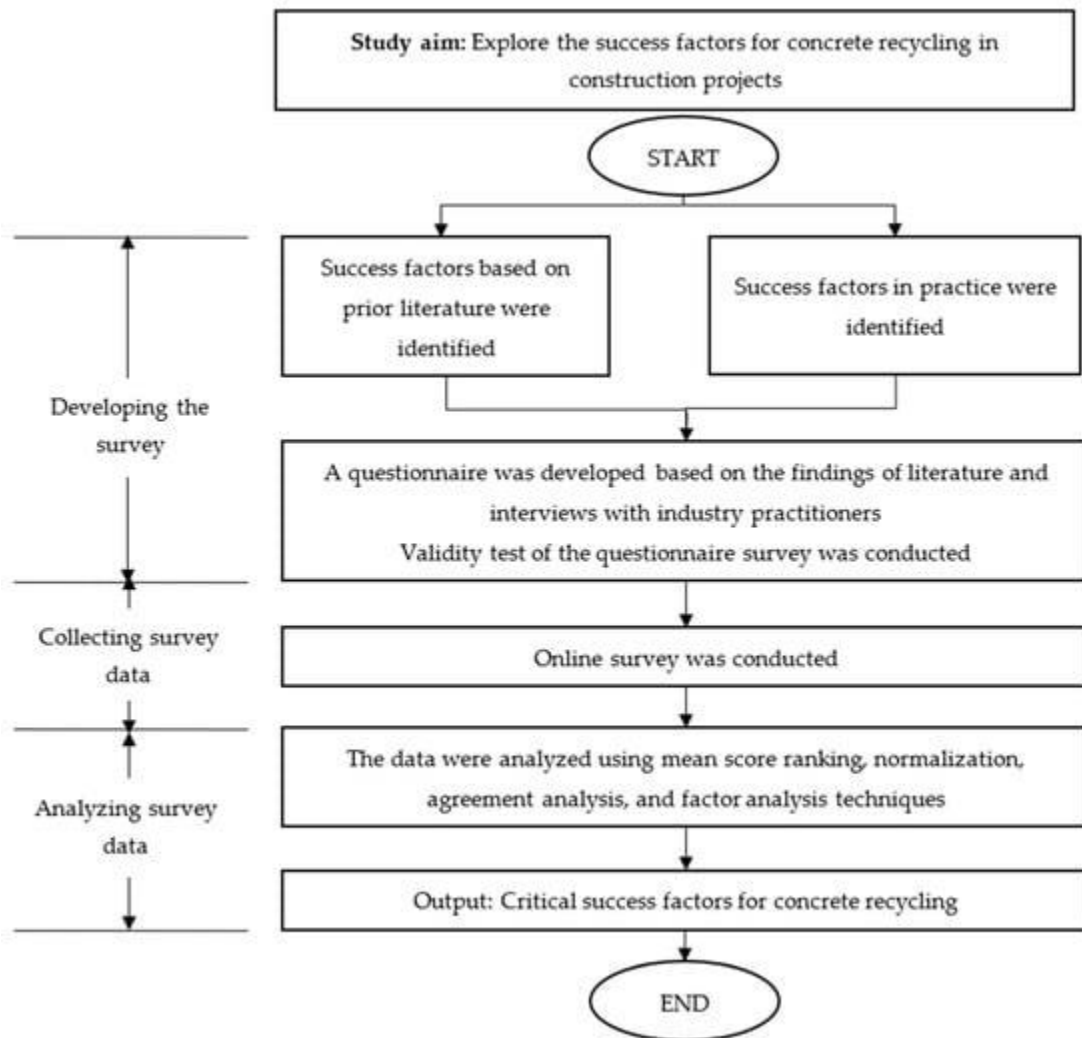
## **Abstract**

This study explores the success factors of concrete recycling in construction projects, using Malaysia as a case study. The objectives include (1) identifying the critical success factors for concrete recycling in construction projects, (2) comparing the critical success factors between large enterprises (LEs) and small–medium enterprises (SMEs), and (3) developing constructs that group the critical success factors. First, a list of success factors was identified through semi-structured interviews with fifteen construction industry professionals and a systematic literature review of journal articles. This list was then incorporated into a questionnaire and disseminated to industry professionals. Eighty-nine valid responses were collected and analyzed using mean score ranking, normalization, agreement analysis, and factor analysis techniques. The analyses showed ten critical success factors for concrete recycling. The critical success factors include the availability of uniform standards for concrete recycling, adequate awareness among project stakeholders on concrete recycling, appropriate construction waste management plans, government policies to support concrete recycling, good marketing strategy for concrete recycling, good communication among employees, applications for recycled concrete in sub-industries, provisions in work method statements on concrete recycling, positive legislation toward concrete recycling, and availability of

concrete recycling infrastructure. However, the percentage of agreement between SMEs and LEs for the ten critical success factors was only 22%. In other words, there is no consensus on criticality across organizational sizes. Finally, the critical success factors can be categorized into two interrelated groups: external and internal. This study contributes to the literature by analyzing the necessary success factors for concrete recycling. The study findings allow researchers and practitioners to develop strategies to promote concrete recycling.

*Keywords:* [sustainable development](#); [sustainable construction](#); [waste management](#); [construction and demolition waste](#); [concrete recycling](#); [critical success factors](#)

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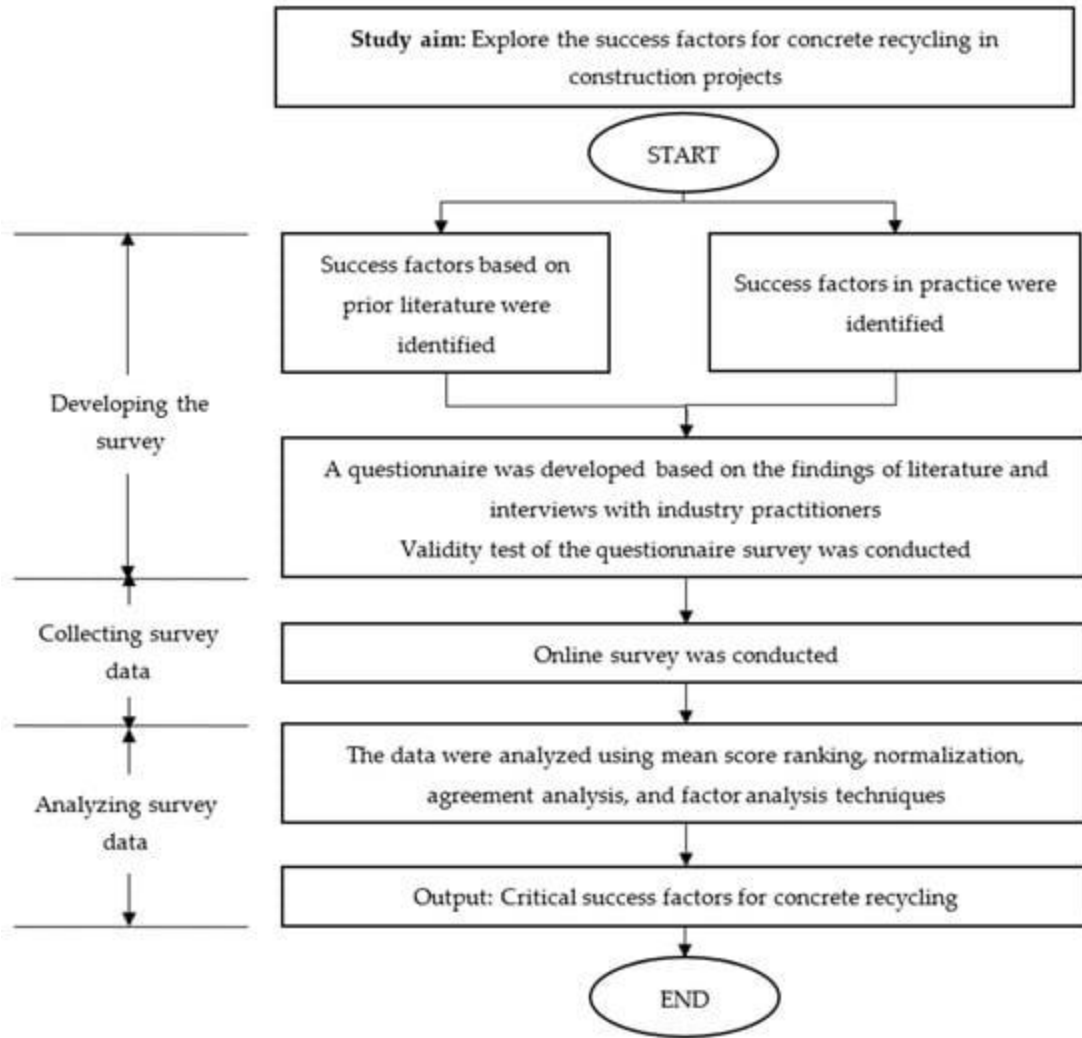


Figure 1