



# Reducing waste to landfill: A need for cultural change in the UK construction industry



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## ABSTRACT

Owing to its contribution of largest portion of landfill wastes and consumption of about half of mineral resources excavated from nature, construction industry has been pressed to improve its sustainability. Despite an adoption of several waste management strategies, and introduction of various legislative measures, reducing waste generated by the industry remains challenging. In order to understand cultural factors contributing to waste intensiveness of the industry, as well as those preventing effectiveness of existing waste management strategies, this study examines cultural profile of construction industry. Drawing on four focus group discussions with industry experts, the study employs phenomenological approach to explore waste inducing cultural factors.

Combining findings from phenomenological research with extant literatures, the study suggests that in order to reduce waste intensiveness of the construction industry, five waste inducing cultural factors need to be changed. These include (i) “make-do” understanding that usually result in “make-do waste” (ii) non-collaborative culture, which results in reworks and other forms of wasteful activities (iii) blame culture, which encourages shifting of waste preventive responsibilities between designers and contractors, (iv) culture of waste behaviour, which encourages belief in waste inevitability, and (v) conservatism, which hinders diffusion of innovation across the industry. Changing these sets of cultural and behavioural activities is not only important for engendering waste management practices; they are requisite for effectiveness of existing strategies. Improvement in the identified areas is also required for overall improvement and general resource efficiency of the construction industry. Thus, this paper advocates cultural shift as a means of reducing waste landfilled by the construction industry, thereby enhancing sustainability and profitability of the industry.

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## 1. Introduction

Construction industry contributes significant portion of the global economy and employs large population across the globe. It accounts for 13% of the global economy and contributes annual amount of \$12trillion, which is projected to reach \$15trillion in 2025, according to a year 2013 analysis by Global Construction Perspectives [23]. As at the year 2008, the UK construction industry accounts for 8% of Gross Domestic Products (GDP), generates employment for over three million workers and contributes annual value of over £100billion [26]. However, the industry is highly fragmented as it seeks to meet demand of its customers

within limited budget, resources and time-frame. As such, a typical project involves several numbers of drawings and different professional activities, whose successful coordination is important for completing the project within budget, expected time, and to the desired quality. Apart from the cultural profile of the industry, organisational culture within one business would not only have adverse effects on the others, it would also affect the collective outputs of the businesses [25].

Meanwhile, apart from its consumption of more than half of mineral resources excavated from nature, construction industry contributes the largest portion of waste to landfill. For instance, the UK construction industry contributes about 44% of landfill waste, while the industry landfilled 44% waste in Australia, 29% in the US and 35% across the globe [16,48,57]. It has often been stated that achievement of the global sustainability agenda and prevention of impending negative environmental impacts depends on

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how well the construction industry is able to reduce its CO<sub>2</sub> emission, virgin materials consumption and waste to landfill [1,2]. As a result of its environmental and financial benefits, several strategies for tackling construction waste have been developed. In addition to these, various fiscal and legislative provisions have been made to engender waste minimisation practices within the construction industry.

Despite increasing waste management research, strategies and legislative provisions, landfilling of construction waste remains a common practice. While other industries have substantially reduced their waste to landfill, proportion of C&D waste landfilled remained alarming [16]. According to Teo and Loosemore [60], increasing waste intensiveness of the construction industry is not only as a result of ineffectiveness of the existing waste management strategies. Rather, waste intensiveness of the industry is enhanced by certain behavioural and cultural values that support construction waste generation [60]. While it is clear that understanding such waste inducing culture could engender solutions to construction waste mitigation, there is paucity of study that evaluates construction waste from cultural perspective hitherto. This represents a gap that this study seeks to fill. The overall aim of this study is to examine cultural profile of construction industry in order to enlighten waste inducing culture within the industry. The study fulfils its goals through the following objectives:

1. To determine behavioural and cultural factors that enhance construction waste generation.
2. To explore cultural factors that hinders effectiveness of existing waste management strategies.

In order to gain in-depth exploration of the concept as understood by the industry's expert, this study employs phenomenological approach as its methodological framework. As such, focus group discussions were used as a means of data collection. As a theoretical background to the study, the next section of the paper established relationship between organisational culture and its overall efficiency. This is followed by justification and description of the methodological approach to the study, which includes sampling, data collection and analytical procedures. The result of the findings are then presented and discussed before culminating the study with a conclusion and implications for practice. The study offers insights into the need for cultural change as a means of reducing waste landfilled by the construction industry.

## 2. Impacts of culture on organisations

Organisational culture is an important phenomenon that determines how members of that organisation relates with one another as well as the external community, in comparison with other organisations. It often encompasses common belief and share assumptions that guide appropriate response and actions for various occurrence [51]. It also determines disposition and belief of a group concerning a subject matter, and it distinguishes the members of one group from another [27]. As it is usually taught or passed to new members through formal training or informal interaction, organisational culture shapes the way a group interact with one another, stakeholders, clients/customers and the general community [56].

Like other industries, construction industry is characterised by cultural differences across firm types, age and size [44]. Understanding these cultural patterns could therefore assist in planning how to manage and improve the industry [55]. With increasing awareness of the impacts of organisational culture on its success, substantial research efforts have been devoted to empirical investigation of organisational culture across several industries and

nations (cf. [11,44]). Evidence suggests that international construction firms often faced problems due to misunderstandings caused by cultural and behavioural differences across organisations [44].

Albeit paucity of studies linking construction industry's culture with its waste intensiveness, studies are rife on the relationship between culture and achievement of organisational goals and development. For instance, Naranjo-Valencia et al. [42] investigate the relationship between organisational culture and openness to innovation. The study suggests that organisational culture does not only determine employees' readiness for innovation, it determines strategy and approach to innovation. Since culture affects employees' behaviour and their disposition to various aspects of their job, it also determines whether they would accept innovation as fundamental value of their organisation or not. Meanwhile, both direct and indirect relationship have been established between organisational culture and performance. According to Denison [17], cultural factors related to organisation of work and decision-making is strongly correlated with financial performance of a firm. This means that an organisation with the right culture of work organisation and decision-making process tends to out-perform its competitors in terms of financial turnover. On a similar note, Kotter and Heskett [35] suggest that an organisation with adaptive values tends to have superior performance over a long period of time. Echoing similar position, Lee and Yu [38] posit that in several cases, cultural elements that distinguish various organisations are related to performance.

Studies specifically addressing construction industry suggest that several cultural profiles, which varies with firm type, organisational size and age, exist within the industry. According to Oney-Yazici et al. [44], firms operating within architectural services and contracting cherished and emphasised culture of stability and team working much more than innovation and productivity. A study of construction waste also suggests that an underlying culture of waste inevitability within the industry is a major cause of waste intensiveness of the construction industry [60]. By believing that waste is unavoidable, waste management is perceived as low priority, thereby receiving less attention and inadequate incentives. These further corroborate the fact that organisational culture within an industry is an important phenomenon that determines levels of importance attached to an activity.

While industry or organisational culture could be seen as indispensable norm within such industry, it could make or mar progress, sustainability and profitability of the industry [11]. As such, it is important that organisations adequately evaluate their culture in a bid to determine their consequences on development. This is particularly important for the construction industry, which is large and complex, and covers a wide range of micro, small, medium sized and large business activities that are all united by their output [25]. In such case, organisational culture within one business would not only have effects on the others, it would also affect the collective outputs, which are usually buildings or other infrastructural facilities.

### 2.1. Culture within the construction industry

As a result of project-based nature of the construction industry, cultural profile of the industry is influenced by its transient working arrangement [33]. Unlike manufacturing industry whose culture is determined by company activities, culture within the construction industry is determined by the project [52]. According to Dainty et al. [15], cultural profile of the industry is not only influenced by its complexity and people intensive nature, it is also affected by its reliance on casualised employment. These make it difficult to have well-established organisational culture as could be found in manufacturing industry [52]. This is further exacerbated

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