An outlook of digital talent management: Construction industry perspective

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An Outlook of Digital Talent Management: Construction Industry Perspective

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Summary

Sustainable Development Goals (2022) (SDG) including Goal 9-Industry, Innovation and Infrastructure sets out to enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries and significantly increase access to information and communications technology. This links directly with the construction industry which suffers from a huge skills deficit that has notoriously delayed the overall construction programme, inflated costs and current employees are regularly changing jobs providing business with the inefficient task of searching for more labour and subsequently prohibits the sector from reaching its full potential. This is currently impacting numerous projects throughout the UK including the housing programme, HS2 and significant infrastructure upgrades. In parallel with this, there is a reluctance for businesses to invest in new technologies regardless of the United Nations and UK Government targets whilst other sectors progress digitally moving towards Industry 5.0. Subsequently, a stringent methodology has been used by using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis mechanism to ensure adequate sources of information were used to fully understand how the sector can progress and provide recommendations.

Keywords: *Talent management, digitalisation, Industry 4.0, digital poverty, sustainability, digital transformation.*

Track: Strategy-as-Practice

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1. Introduction

Sustainable Development Goals (2022) (SDG) including Goal 9-Industry, Innovation and Infrastructure sets out to enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries and significantly increase access to information and communications technology, whilst the construction industry is suffering from a major skills deficit that has been inflated due to the COVID-19 pandemic. This affects a multitude of job roles including skilled labour, Architects, Engineers and Project Managers where there is already a shortage. The sector is slow at adopting technological innovations which will hold the sector back from the fifth industrial revolution, where other industries are further advanced and regularly upskilling staff to keep up with new technological methods, but the COVID-19 pandemic created challenges for many employees and organisations that has forced technological advancements and digital upskilling. However, organisations are still facing skills shortage challenges that require digital investment to enhance the Internet of Things, Artificial Intelligence, digital twinning, big data and robotics that will provide greater productivity and efficiency whilst encouraging a new generation of skilled workers for the construction industry resulting in increased competition and profit.

2. Literature Review

The UK Government (2013) expects the international economy to create new opportunities and the global construction industry to grow by 70% by 2025. Bai *et al.,* (2020) and Pollak *et al.,* (2020) both explain Industry 4.0 is transforming business models to improve talent management whilst supporting flexibility, efficiency and productivity contributing to global sustainable development. Ossenbach of Dormakaba (2020) explain that sustainability is about

development and growth in an eco-friendly environment and smart technologies from the fourth revolution will allow the construction sector to enter a truly sustainable era. This is supported by SDG goal 9 (2017) and the UK's Industrial Strategy (2017) which set out to enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries and significantly increase access to information and communications technology. However, the UK Parliament Post (2021) explain that around a fifth of the UK population do not have essential digital skills for life and 44% of organisations suffer from a digital skills gap. This is recognised within the construction industry as many industry professionals including Froese (2010), FMI (2020) and Chowdury *et al.,* (2019) who feel that the construction industry must improve talent management using digitalisation within the sector to help improve quality, sustainability, productivity and profitability. Kramer (2020) explains that digital poverty has become increasingly prevalent due to the COVID-19 pandemic as more people have needed digital skills to work remotely using new technologies and Seah (2020) explained that disparities still exist in this country as 1 in 10 households still do not have access to the internet. Sebright *et al.,* (2022) explains that the sector is suffering from an aging workforce and will lose the existing skills that are necessary for their sector, and this implicates the construction industry as new young workers are not joining the sector and subsequently experienced workers will not be able to pass on their skills. Therefore, Seah (2020) explained that technology has displayed a new digital dimension of inequality showing new levels of connectivity are leading to a range of different digital inclusions and exclusions.

The UK's Industrial Strategy (2017) sets out 5 foundations of productivity which include; Ideas, People, Infrastructure, Business Environment and Places that formed the basis of digital transformation throughout the UK. Further to this, Koscheyev *et al.,* (2019) explains that the construction industry has a high interdisciplinary influence and interaction and due to COVID-19, digital transformation is more and more frequently mentioned among critical factors intended to enhance organisational competitiveness and successful development. Morse *et al.,* (2021) understands that modern digital transformation must follow a basis of 5 technologies that includes the Internet of Things, Artificial Intelligence, Blockchain, Big Data, Robotic Process Automation. Using these digital improvements will improve both social aspects and organisations to enhance services, quality, compliance, and productivity. However, the construction industry, especially smaller organisations are slow at investing in technological advancements and Pollak *et al.,* (2020) explains that companies are not committing to all dimensions of Industry 4.0 and due to this sustainability is not achievable.

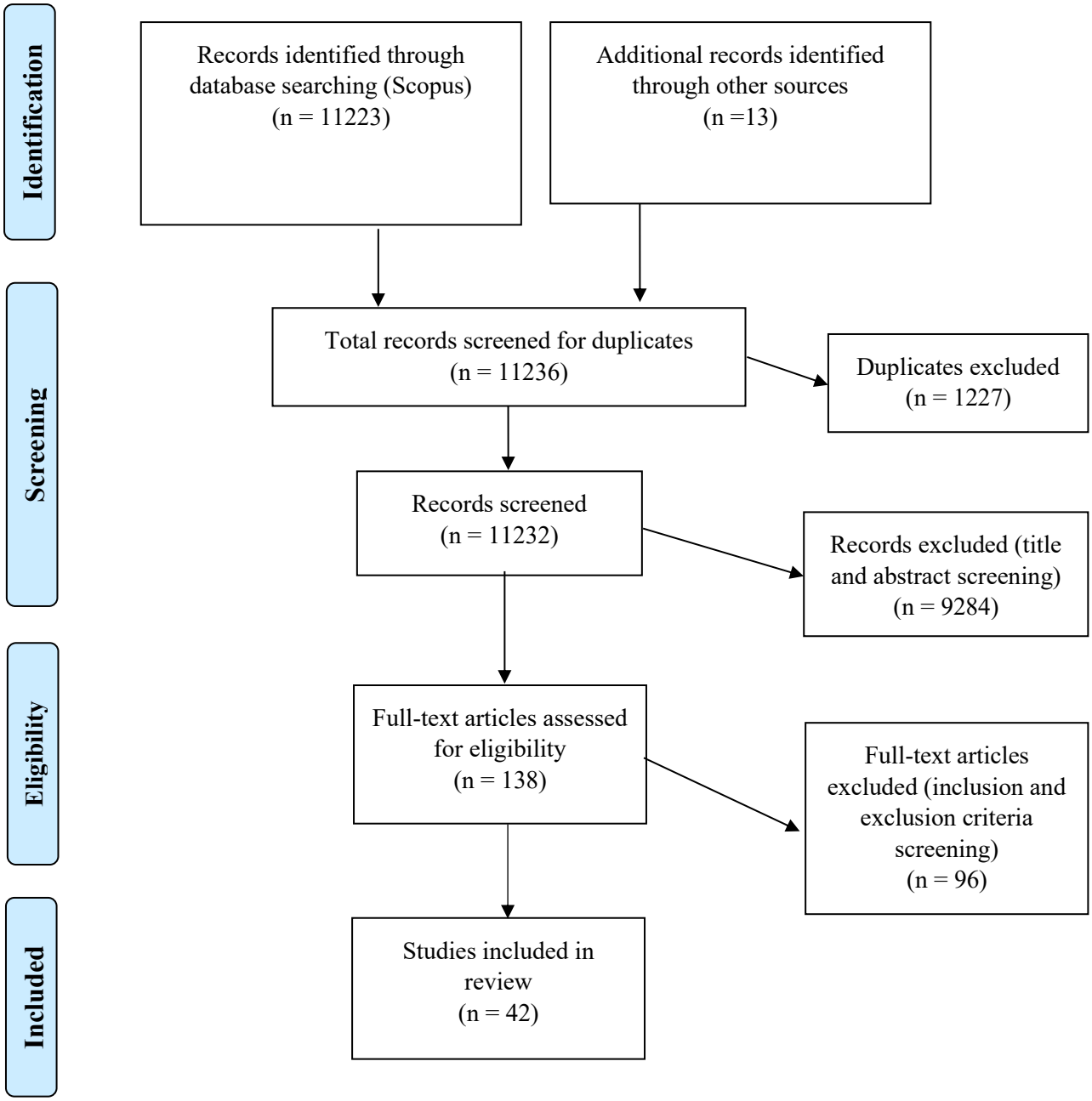
Deloitte (2021) report that strong leadership is essential to produce a lean efficient workforce that can articulate the benefits of sustainability in a workforce, and it is essential that the construction industry uses the economic downturn to attract new talent from other industries whilst promoting the construction industry to young enthusiastic students who will offer a new dimension of digital working whilst aging workers are retiring. This will be essential to meet decarbonisation targets across the UK and new positions within organisations will become essential by employing sustainability officers to design, implement and monitor net-zero standards within businesses to meet government legislation.

It is evident that the construction industry must enhance talent management strategies to reach the standards of Industry 5.0 whilst other sectors have already reached this goal. By striving towards this, it will not only reach out to potential talent who are not currently employed in the construction industry but will increase innovation, productivity and profit.

3. Methodology

The primary objective of this study is to explore the UK digital talent to attract and retain digital throughout the construction industry whilst understanding the learnings from businesses' COVID-19 experiences. The first stage covers the collection of secondary data using a systematic literature review approach using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). The systematic review approach was developed to collect the available data, filter it according to the credibility of the sources, to analyse the filtered data to determine its overall effect and finally, to disseminate the data based on its effectiveness (Higgins and Green, 2011). Moher *et al.,* (2015) explains that detailed, well-described protocols can facilitate the understanding and appraisal of the review methods, as well as the detection of modifications to methods and selective reporting in completed reviews. This study uses a mixture of literature by using peer reviewed journal papers and government strategies to understand the current outlook of the construction sector.

Figure 1: PRISMA diagram



The steps followed for the systematic literature review proposed by Tranfield *et al* (2003) and are as the following:

- Formulation of the review question.
- Identification of keywords and search terms based on scoping study, the available literature and researchers' suggestions.
- Identification of the most appropriate search strings.
- Compilation of a full list of information search outputs of all articles and papers reviewed.
- Incorporation of studies that meet the inclusion criteria as specified into the research.

Search Process and search term generation

A search of databases including Scopus and Google Scholar were used and further to these reports from industry bodies and professionals were reviewed to ensure a full review of industry literature was used to enhance the research. Titles including one or more of the search terms: Talent management, construction skills shortages, Industry 4.0, talent retainment, digital sustainability, digital infrastructure, net-zero skills, and drivers or benefits. The searches took place in January 2023, covering all years of publications from 2010. Figure 1 displays the PRISMA diagram displaying that 11223 were initially screened by Scopus and an additional 13 documents were sourced. 11236 were screened for duplication which removed 1227. Once all screening was complete 42 studies were used for this study.

Literature Review Question

A well identified and constructed research question guarantees a focus on the research scope and avoid unrelated searching and limit the risk of turning the literature review process into one that is significantly large and non-systematic. Petticrew and Roberts (2006) argued that breaking the review question into sub-questions ensures a better framing and formulation of the question. The population, intervention, control, and outcomes (PICO) model is a tool that can be applied in this case.

Table 1: Systematic literature review process

Acronym	Definition	Description
P	**Population**	Construction business, bodies and the UK Government
I	**Intervention**	Government and construction body strategies
C	**Comparison**	Strategies vs reality of the construction industry
O	**Outcome**	What is the outlook of the sector?

The developed literature research question is as follow: **What is the outlook of UK construction industry from a digital talent management perspective?**

Identification of inclusion/exclusion criteria

The selection process relied on a thoroughly specified benchmark to select relevant primary studies (Ali and Petersen, 2014; Petersen and Ali, 2011). Hence, the inclusion of:

1. Papers that we believe contribute to the body of knowledge on digital talent management.

2. Papers that are from peer-reviewed journals, conference proceedings, government publications or construction bodies.

Primary studies on the following topics were excluded:

1. The paper focused on aspects of digital talent management in the UK not focusing on worldwide strategies apart from the SDG (2017).

2. The paper is written in a language other than English.

4. Results and Conclusion

Current literature shows that whilst the UK workplace and in particular the construction industry is suffering from digital skills gaps that are essential for the workplace, however statistics show that 1 in 10 household do not have the ability to work remotely. Digitalisation can be used not only to enhance the skills of individuals but to catapult the construction industry forwards and attract new talent that will not be expected to undertake the dangerous and dirty work that is currently associated with the built environment. Therefore, the sector must improve the diversity within the industry to reduce digital skills shortages and bring new ideas to enhance digitalisation whist overcoming a multitude of other barriers throughout the sector. By ensuring that technological methods such as the Internet of Things, Artificial Intelligence, Blockchain, Big Data and Robotic Process Automations, this will improve productivity by reducing the backlog of work within the construction programme and moderate inflating costs. However, there is proving to be a disconnect between the expectations of the goals set out by the United Nations and the UK Government compared with individual businesses throughout the sector.

Regardless of this digital talent management and skills shortage issues could be reduced by recruiting a diverse workforce and future leaders to inspire new innovation driving the sector forward and complimenting the SDG's and multiple government guidelines.

5. Strengths and Limitations

This study included strategies produced by both the United Nations and UK Government that have been implemented since 2017 and more over some of the Government strategies have been implemented due to the Covid-19.
However, relying on a systematic review as a search strategy involves the risk that valuable published sources and articles are excluded due to being deemed as out of the scope strategy, therefore due to a lack of published evidence, articles and statistics have been used to support the published evidence. Only publicly available databases and full text available articles were searched and reviewed. Additionally, conference materials were also excluded from this review but there has been some good material that are published in conferences. This potentially omitted valuable published materials which may have been vital to this study. However, most conference papers are further developed and published in peer reviewed journal papers.

6. Future Research Development

Further studies should concentrate on how the UK Government and the construction industry can ensure that individuals have the appropriate digital skills for the workplace and what skills are required within the construction industry to help it reach its full potential. Failure to understand this will keep delaying key construction and infrastructure projects throughout the UK.

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