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LEADERSHIP FOR THE FUTURE: TOWARDS THE CHALLENGE OF UNDERSTANDING LEADERSHIP IN THE AEC SECTOR

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The Irish Architecture, Engineering, and Construction (AEC) sector faces ongoing challenges relating to low productivity, digital adoption, sustainability, and innovation. Effective leadership is required to transform the sector to address these challenges and meet the future needs of society. However, there remains a lack of empirical evidence relating to leadership requirements, assessment, and development, in the context of the Irish AEC sector. As part of an ongoing study with the aim of developing resources to support leadership development, this research, conducted through a review of literature, examines how leadership is being assessed and explored in the AEC sector. The findings highlight the importance of leadership in addressing critical issues facing the sector including innovation, modernisation, sustainability, and safety. Furthermore, the findings underscore methodological challenges faced in exploring leadership in practice from a solely positivist quantitative approach. This research makes important contributions by highlighting current trends in AEC leadership research, and illuminating the contextual complexity surrounding what is effective leadership in the AEC sector.

Keywords: leadership; leadership assessment; AEC sector; construction sector

INTRODUCTION

The AEC sector in Ireland contributes significantly to economic growth, employment, and the provision of the built environment within which we work, live, socialise, and learn (Murphy and Seriki, 2021). The sector must address significant challenges to meet future societal demands (DPER, 2019) including sustainability, labour shortages, supply chain volatility, and a reluctance to innovate (KPMG *et al.,* 2020). It is acknowledged that these challenges are not unique to Ireland (similar challenges have been highlighted in the 2016 Farmer report on the UK sector) however, the leadership required to address these challenges may be significantly different in an Irish context as national culture can affect prototypical understanding of leadership and how effective leadership is defined and interpreted (Antonakis *et al.,* 2003). Leadership is an essential factor required for the sectors transformation towards innovation, modernisation, and sustainability (Farmer, 2016; Murtagh *et al.,* 2020) . Consequently, understanding and developing leadership is imperative.

Industry stakeholders have expressed the need for effective leadership (Construction Industry Federation, 2019), however, there remain significant misconceptions surrounding the nature of leadership in practice (Northouse, 2021). Leadership is a complex but well researched phenomenon (Löwstedt *et al.,* 2021), which in practice,

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is an interactive, social, and dynamic human behaviour informed by motivation, values, and context (Potter *et al.,* 2018; Yukl *et al.,* 2002; Zhang *et al.,* 2018). Leadership can be viewed as a process, and as such, can be learned, developed, and taught (McCauley and Palus, 2021). However, despite the maturity of leadership research in other sectors, leadership research in the AEC sector is still in its infancy (Löwstedt *et al.,* 2021).

A route to enhancing leadership, and more effective leaders, is through leadership development and training (Day *et al.,* 2021), and for leadership development initiatives to be meaningful and effective, they must be derived from a clear understanding of the leadership requirements of the sector (Simmons *et al.,* 2020). However, a fundamental knowledge gap exists in relation to empirical evidence surrounding effective leadership in the Irish AEC sector. As part of an ongoing study, taking a systematic approach, this research examines how leadership in the AEC is being explored. Following an outline of the theoretical background and the methods employed, the results highlight both the import of leadership and the methodological challenges faced in assessing leadership in AEC settings. By understanding leadership in practice, that knowledge can inform leadership development initiatives of practical benefit to the sector (Simmons *et al.,* 2020).

Theoretical Background

For over 70 years, researchers have examined which leader behaviours, traits, and competencies are effective in different situations (Northouse, 2021; Yukl *et al.,* 2002). Studies in a broad range of sectors including, hospitality, banking, manufacturing, and healthcare have demonstrated the effects of leadership on critical issues such as performance, innovation, productivity, and sustainability (Parry *et al.,* 2014; Pham *et al.,* 2021; Yukl *et al.,* 2002). Leadership has been examined using diverse methods including observational studies, ethnography, interviews, surveys, and experiments (Grill *et al.,* 2019; Löwstedt *et al.,* 2021; Parry *et al.,* 2014; Yukl *et al.,* 2002). The contingent nature of leadership has been demonstrated, in that, leaders will behave differently depending on factors including cultural setting, project objective, team configuration, resources, and urgency (Northouse, 2021; Wipulanusat *et al.,* 2017; Zhang *et al.,* 2018). Furthermore, research finds leadership to be a complex social phenomenon that requires context derived from interactions between leader and follower (Bryman, 2004; McCauley and Palus, 2021).

Leadership in practice can be enhanced by development initiatives but need to be contextualised to the area of deployment (Day *et al.,* 2021; McCauley and Palus, 2021). Leadership development studies have shown that the context should be derived through empirical evidence and understanding of leadership within the area of investigation (Day *et al.,* 2021; Simmons *et al.,* 2020). Of critical importance, Day *et al.,* (2021) contend that leadership development initiatives are built on scientifically sound frameworks.

Leaders' values, motivations, and behaviours have been studied and developed into identifiable frameworks of how leadership is enacted and examined (Grill *et al.,* 2019). Prior research supports two meta categories of leadership behaviour, Task-oriented and Relations-orientated (Banks *et al.,* 2018) Task-orientated behaviour is concerned with behaviours that are focused on defining subordinate roles and tasks, directing efforts, and deploying discipline (Lingard *et al.,* 2019). Relations-oriented behaviour is the degree to which a leader demonstrates concern for team members, demonstrates support, and recognises efforts (Grill *et al.,* 2019).

Avolio and Bass, (1995) further categorised leader behaviours into groupings that represent three leadership styles referred to as The Full Range Leadership Theory (FRLT). A leadership style is a distinct set of behaviours and values used to describe a leaders influence on, and interaction with, followers, organisation, and objectives (Potter *et al.,* 2018). Leadership styles are defined, observable, and comparable, and as such, have proven to be a valuable tool in assessing leadership in practice (Banks *et al.,* 2018). Table 1 provides a summary description of the FRLT leadership styles; Transactional, Transformational and Laisse-Faire.

Table 1: Summary descriptions of FRLT leadership styles

Leadership Style	Summary Description and Behaviours
Transactional (Avolio and Bass, 1995)	Team obey leaders for rewards. The reward may be praise, recognition, or avoiding disciplinary action.(Lingard *et al.,* 2019)
Transformational (Avolio and Bass, 1995)	Raises followers needs towards self-actualisation. Idealised Influence, Intellectual Stimulation, Inspirational Motivation, and Individualised Consideration. (Zavari and Afshar, 2021)
Laissez-Faire (Avolio and Bass, 1995)	Gives team freedom, avoids giving direction. Requires a large degree of self-motivation from team.(Olasunkanmi *et al.,* 2023)

Transactional, Transformational, and Laisse-faire leadership are supported by a vast number of studies (Banks *et al.,* 2018) and have been described as established leadership styles (Dinh *et al.,* 2014; Siangchokyoo *et al.,* 2020). There are a great many more leadership styles and constructs in the literature (Hussain and Hassan, 2016) however, many have not benefited from the same degree of large scale, multi sector, empirical validation (Banks *et al.,* 2018)

METHODS

As part of an ongoing study, a systematic approach was chosen for this review of literature. In line with Gough *et al.,* (2012) and Booth *et al.,* (2018) a relativist-idealist position was taken, in that the study is not seeking a single correct answer but examines, through the lens of a review of literature, the variation and complexity of research surrounding leadership in the AEC sector. A predefined framework, Figure 1., was developed to allow combining of data from different study types with the aim of delivering a coherent narrative synthesis of the data (Brunton *et al.,* 2020).

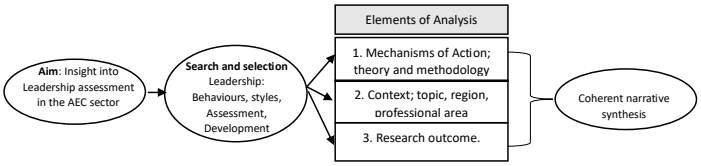

Figure 1: Review framework for search and analysis elements

The review is not comprehensive as it is limited to specific dates. Furthermore, guidelines for a systematic review indicate that a team of at least three researchers are involved in the selection of studies but, in this case, one researcher was involved in the selection (Page *et al.,* 2021). As the method was otherwise strictly followed, it can be described as systematic in approach.

Inclusion and exclusion criteria

The review is concerned with peer reviewed research published in indexed academic journals. It is limited to research focused on leadership assessment, evaluation, and development in the AEC sector. In order to deliver contemporary results, and to limit the examination to a manageable number of studies, the search was limited to a period from 2016 - 2023. Given the quantity of leadership styles mentioned in the literature, papers that examined leadership style were only included if the leadership style

construct has benefited from meta-analytical, longitudinal, and multi-source validation studies.

Data Collection

Scopus and Web of Science were used as sources for the data collected. The Scopus database was chosen as it has been described as the world's largest abstract database of indexed, peer reviewed, scientific literature (Schotten *et al.,* 2017). Web of science was chosen as it has been described as having the most in depth scientific papers (Schotten *et al.,* 2017). Four separate searches using modified search parameters, including leadership style, leadership assessment, leadership development and leadership behaviours, were performed focusing on Architecture, Engineering, Construction, and AEC.

Data analysis

Taking an inductive approach, the data was examined in line with Schick-Makaroff *et al.,* (2016) using defined elements of analysis. The elements of analysis chosen to facilitate a coherent narrative synthesis were 1. Mechanisms of action (Data collection and theoretical underpinning) 2. Context (Region, topic, and professional area), and 3. Research outcome. Table 2 below summarises the search and selection as performed. Full text of 347 papers were examined resulting in 15 being deemed to meet all of the inclusion criteria.

Table 2: Summary of search and selection performed

Identification		Screening		Included
Records identified from databases (n = 3,712) less duplicates (n=1802)	Records screened by title. (n = 1802)	Abstract screening of reports (n = 737)	Full text of studies assessed for eligibility. (n = 347	Studies included in review. (n = 15)

FINDINGS

The search results delivered 15 research papers conducted in 18 countries. Table 3 presents a summary of the research papers included in this study. The dominant method of data collection was quantitative surveys, 13 were mono method studies with just two deploying mixed methods.

Table 3: Summary of studies included

Author	Topic	Region	Method
Grill *et al.,* (2019)	Safety	Sweden, Denmark	Mixed
Lingard *et al.,* (2018)	Safety	Australia	Quantitative
Löwstedt *et al.,* (2021)	Leadership attitudes	Sweden	Qualitative
Ntseke (2022)	Employee retention	South Africa	Quantitative
Olasunkanmi (2023)	Efficiency	Nigeria	Quantitative
Owusu-Manu (2021)	Leadership style	Ghana	Quantitative
Pham (2021)	Green innovation	Vietnam	Quantitative
Potter *et al.,* (2018)	Leadership style	UK and NZ	Quantitative
Shafique (2022)	Team performance	USA	Quantitative
Simmons *et al.,* (2020)	Behaviours	USA	Qualitative
Tabassi *et al.,* (2016)	Project success	Malaysia	Quantitative
Wipulanusat, (2017)	Innovation	Australia	Mixed
Wu *et al.,* (2022)	Safety	China	Quantitative
Zavari &Ashfor (2021)	Project success	Iran	Quantitative
Zhang *et al.,* (2018)	Innovation	China	Quantitative

The studies broadly fall into two categories (a) Studies examining the effects of leadership on specific challenges in the AEC sector and (b) studies that look to explore leadership in practice within the sector.

Exploring leadership styles in the AEC sector

This category of papers focused on leadership styles effectiveness in particular settings, what sets of behaviours and competencies may be useful to leaders, and what are the attitudes and understanding of leadership held by leaders in the AEC sector.

Olasunkanmi *et al.,* (2023) investigates perceived effectiveness of leadership styles in the Nigerian AEC sector and finds, through a large qualitative study involving 975 participants, that transactional leadership was considered the most effective style. Conversely, Tabassi's (2016) quantitative study on leadership sustainable building projects in Malaysia suggest that transformational leadership, combined with specific competencies, was a strong predictor of project success in sustainable construction (Tabassi *et al.,* 2016). The competencies found to be factors in successful leadership were strategic perspective, critical analysis, communication, empowerment, vision, and resource management. The differing results between the two studies highlights the possible effect cultural differences can have on leadership in practice.

Potter *et al.,* 2019 examines leaderships style in project managers in the UK and New Zealand construction sectors. Their results indicate that transformational leadership was the most prevalent style being deployed by the participants. The results diverge somewhat from Owusu-Manu *et al.,* (2021) who find democratic leadership to be the most common style of leadership being used by project managers in the Ghanaian construction sector. (Owusu-Manu *et al.,* 2021). The results are useful, in that understanding what leadership styles are being deployed in a professional context can assist in the identification, selection, and development of potentially high performing leaders in the role of project manager. Although enlightening, Potter *et al.,* (2018) and Owusu-Manu *et al.,* (2021) and Tabassi *et al.,* (2016) focused on the leader's perspective, paying little attention to the social dynamic involving team members, thereby providing a possibly less complete picture of the phenomenon.

Löwstedt *et al.,* (2021) take a different path to many researchers in the AEC sector industry in that they explore, through a qualitative study, attitudes and understanding of leadership in practice within the construction industry in Sweden. The inductive qualitative approach using in-depth interviews found that although leadership was viewed as somewhat important for the participants, it was seen as an 'add-on' to the more important skills of construction (Löwstedt *et al.,* 2021). This may have implications for leaders' willingness to partake in leadership development. This finding is important, as for leadership to be truly effective, it should be embedded across all levels of an organisation (Olasunkanmi *et al.,* 2023) and perceptions that it is an addendum indicates that it is not integrated.

Towards addressing the need for leadership development in the construction sector, Simmons, *et al.,* (2020) attempt to define what leadership competencies are required by engineering professionals. Employing the Delphi method, 24 leadership competencies were deemed important by the participants. The list of competencies is broad and perhaps vague with titles such as 'legal knowledge' and 'business skills'. Of the 24 competencies outlined, nine appear to relate to leadership behaviours (Yukl, 2012). While competencies are an important factor in leadership, omitting leadership behaviours and leadership values narrows the existing and broader established understanding of leadership that has developed over the past 100 years (Northouse, 2021; Yukl, 2012).

Leadership effects on specific challenges

As the search did not specifically look for particular challenges, these results give insight into some of the issues related to leadership that researchers find of interest. Innovation, environmental challenges, employee concerns, and site safety are the focus of these studies.

Leadership, according to Wipulanusat *et al.,* (2017), plays a fundamental role in organising and motivating teams through structures and processes to achieve a climate of innovation. Wipulanusat *et al.,* (2017) through a large-scale quantitative study involving over 3,000 engineers in Australia (both leaders and team members) found that when transformational leadership was deployed it encouraged innovation, and innovative behaviours, in employees. The results align with Zhang *et al.,* (2018) who also found that transformational leaders at an executive level develop a climate of innovation within the construction sector setting in China. Pham *et al.,* (2021) find that transformational leadership can promote both green learning and green innovation in supply chains in Vietnam. However, at the site manager level in Iran, Zavari and Afshar, (2021) in divergence with Zhang *et al.,* (2018), could not find a relationship between innovation in team members and transformational leadership.

These studies highlight that leadership is impacted by the context of role in addition to the context of cultural setting. These studies employed a positivist approach, in that they sought to confirm a relationship with a style of leadership and innovation which limits the ability to view leadership in a broader flexible way. However, Wipulanusat, *et al.,* (2017) in using a mixed method approach involving both leader and team members offers a more complete in depth insight. Furthermore, these findings indicate that incorporating transformational leadership into leadership development initiatives at the procurement, engineering, and executive level could help develop and foster a climate of innovation, which may have an impact on firms' propensity to modernise and engage with novel sustainable practices.

Shafique and Mollaoglu, (2022) find transformational leadership to be positively associated with team performance in green AEC projects. Leadership effects on team members is also examined by Ntseke *et al.,* (2022), who find through a quantitative study of engineers in South Africa that transformational leadership behaviours are associated with both employee retention and employee engagement. Although the results are in line with studies from other sectors, Ntseke *et al.,* (2022) do not take into consideration other factors effecting employee retention such as job security or salary which may be significant overriding factors in employee intentions. Failing to consider external factors of significance to participants may affect the robustness of the findings. While quantitative mono-method studies like Ntseke *et al.,* (2022) and Shafique and Mollaoglu, (2022) do provide insight, as leadership is a social interactive phenomenon, they can fail to capture a deeper understanding of the dynamic between leader and team member that qualitative methods allow. Furthermore, research relating to performance and team member retention is an important avenue which can inform leadership development requirements.

Site safety has been cited as an ongoing critical concern for the AEC sector and as such, unsurprisingly, safety has been the focus of a number of studies relating to leadership in this review. Lingard *et al.,* (2019) explore the effects of leadership style and communication on Health and Safety (H&S) practices of construction workers in Australia. The results indicate that transformational leadership is positively associated with H&S behaviours, but transactional leadership was the strongest predictor of H&S

compliance. This would indicate that a more ridged style of leadership is appropriate for improved safety. The results are largely in line with Wu *et al.,* (2022) who surveyed construction workers in China and found transactional leadership to be positively associated with safety compliance. Both of these studies collected data from team members as opposed to leaders which may be insightful as the investigations concern the participants own actions as opposed to desired actions from the leadership perspective. However, the studies only deal with one side of the leadership dynamic which, as with leader only studies, can present a less than complete picture (Parry *et al.,* 2014).

Conversely in Scandinavia, Grill *et al.,* (2019), using mixed methods involving onsite observations of interactions between leader and team member, found that transformational leadership was more positively associated with site safety measures. The study, through its design, pays attention to the interactive nature of leadership. However observational studies are challenging as the presence of a researcher can influence the behaviour of participants which in turn affects the data. While grill et al.'s study appears more comprehensive, in that it explored leadership from both leader and team member, the diverging results with Lingard *et al.,* (2019) and Wu *et al.,* (2022) may be as a result of the contingent nature of leadership highlighted by the different cultural settings. Findings like these have a practical benefit to industry in that they can help inform what specific leadership behaviours could be developed in order to enhance site safety.

DISCUSSION

Examining the research in concert does provide clear indications as to the positive effects of types of leadership on specific issues. While the work of Grill *et al.,* (2019); Lingard, *et al.,* (2019) and Wu, *et al.,* (2022) deliver valuable insights on effective leadership as it relates to site safety, it also highlights the contextual nature of leadership, in that, what is effective in China may not be effective in Scandinavia. However, because of the singular issues of these studies, their impact on developing an overall picture of leadership across the multiple arenas in the AEC sector is limited. The research exposes a further contextual challenge in the different leadership roles explored (project manager, site manager, executive), and how leadership can be different in each role. This has significant implications for leadership development initiatives as they need to be customised to the individual context (Day *et al.,* 2021; McCauley and Palus, 2021).

It is also worth noting the limited number of empirical studies (15) that met the inclusion criteria which reenforces the view that leadership research in the AEC sector is underserved. This highlights the need for explorations surrounding leadership in the Irish and broader AEC sectors. Furthermore, in line with other studies (Banks *et al.,* 2018; Parry *et al.,* 2014), this research shows a reliance on the positivist paradigm. Although informative, future research would benefit from explorations into other philosophical standpoints where broader and more flexible views are considered (Löwstedt *et al.,* 2021). However, this will create further challenges in terms of methods and resources.

A trend highlighted by Bryman *et al.,* (1988) of the near homogeneous use of solely quantitative methods which struggle to illuminate the intricacies of construction industry leadership appears to continue. This may be due to the technical nature of the sector not being conducive to examining social phenomenon (Bryman *et al.,* 1988; Löwstedt *et al.,* 2021). While the mono method quantitative approach can provide

(limited) insight, diverse mixed method approaches as used by Grill *et al.,* (2019) and (Wipulanusat *et al.,* 2017) can provide greater insight (Bryman *et al.,* 1988; Northouse, 2021; Parry *et al.,* 2014). Furthermore, 11 out of 15 of the studies collected data from only leaders, or only team members, which provides a restricted view of interactive relationships (Zhang *et al.,* 2018). Mixed methods studies involving both leaders and team members have potential to provide considerably more in-depth and fuller picture of the leadership in practice (Grill *et al.,* 2019). This interconnected view of leadership should be considered when formulating a research strategy to explore the phenomenon in the Irish sector, which in turn can better inform what is needed and is appropriate for leadership development initiatives.

CONCLUSIONS

This research makes important contributions by illuminating the significant contextual and methodological challenges to exploring leadership in practice within the AEC sector. This study finds a reluctance on the part of AEC researchers to engage with the social interactive nature of leadership involving both leader and team follower. By doing so, researchers are examining a less than holistic view of leadership which will ultimately under inform the leadership development that is called for.

Particular leadership styles have been found to be effective in particular contexts, however, that context is of critical importance. Insights into effective AEC leadership vary in different jurisdictions and in different roles. So, in effect, there is no single answer to "what is leadership in the AEC sector", but a collection of leaderships, each of which must be investigated in order to build a picture of a what effective leadership looks like within the sector.

For leadership development initiatives in the Irish AEC sector to be significant, they must be based on empirical evidence derived from an Irish context. In order to make meaningful advances in this area, future studies should consider multi-level, leader and team investigations using diverse methods to build up a picture of effective leadership in the Irish AEC sector. It is only with this knowledge that we can scientifically inform the leadership development that is required to support the sector in meeting its future societal demands.

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