The Leadership Triad in Digital Construction: A Behavioral Model for ISO 19650 Adoption

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Abstract

Purpose – ISO 19650 plays the most important part within the current digital transformation of the construction sector. However, the implementation of this ISO 19650 standard faces major challenges that primarily involve organizational and personal aspects. Based on this context, the current research aims to fill the "digital leadership gap" through exploration of critical factors for effective implementation from the perspective of interrelations between different leadership styles and change management strategies. Design Methodology – This current research used a mixed-methods design that combined quantitative and qualitative research. The case information was collected from 104 participants who answered the questionnaire. Additionally, seven in-depth interviews were conducted with experts from the sector. These were stratified because they targeted two opposing contexts: on one side the United Kingdom (because the motivation is obligatory for the whole organization), while on the other side Saudi Arabia (due to motivational ambitions that fall into the framework of "Vision 2030"). Results – The quantitative results showed that transformational leadership style and effective systematic change management were the most essential factors that influence successful implementation. Furthermore, the results confirmed that the directive style was not significant on the whole. These results were deepened from the quantitative results using the complementary information that showed that leaders who use "behavioral flexibility" have better potential to balance transformational (to create vision), participative (to induce ownership), and directive (as tactics on critical points) approaches. Results demonstrated that the initial context of leadership had significant influence on the initial phase of change management. Practical Implications – Given the findings from this current research, the ILCM (Integration of Leadership and Change Management) framework was proposed. According to the results, it was clear that the key factor to ensure the achievement of change management in any organizational context was the strategic integration of leadership qualities. These findings led to providing specific advice that urged all organizations to improve "leadership flexibility" among their leaders and change management strategies embodied in plan design. These advice urged researchers and designers of change management strategies to incorporate leadership strategies into every stage of change management. Additionally, they considered the specific context depending on the motivations. Originality Value - The originality and value addition of this research work arise from its ability to offer an integrated model that captures the dynamic interplay between the theory of leadership and change management in order to fill the gap that exists between theory and practical applications in the construction industry. The research also adds to the existing knowledge base through its comparison approach that gives an accurate interpretation of how the digital transformation routes are affected by the impact of numerous factors of influence.

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1. Introduction

The global construction industry is undergoing fundamental transformation at the hands of a powerful digital wave, shifting from a fragmented, paper-based model to an integrated, data-driven system. The ISO 19650 series of international standards is the backbone behind this transformation in formalizing and capturing maximum value from Building Information Modeling processes through management of structured information throughout the entire life cycle of a construction asset. This standard is much more than a technical protocol; it is, instead, a strategic framework for re-engineering business processes and ensuring collaboration among numerous stakeholders and promises significant increases in efficiency, reduced waste, increased transparency, and regulatory compliance [1].

However, despite these evident advantages, the standard faces effective and widespread adoption with methodological challenges. Consistently, research portrays that such barriers are not fundamentally technical in nature but organizational and behavioral, in nature, expressed as resistance to change, rigid organizational culture, and lack of strategic vision by leadership [2,3]. This underlines the "digital leadership gap." Although the academic literature has been developing the concept of digital leadership-notably, as a technology-mediated process of social influence aimed at changing behaviors and performance, [4], however, its application within construction sites has remained somewhat undeveloped. There has been a recent systematic review of literature that suggests that there has been extensive research activity within digital leadership studies across such topics as digital transformation and virtual teams, though its application within construction has yet to be fully developed [5] Most studies tend to be theoretical in nature (for example, literature reviews) or conducted in other sectors (such as education), meaning that there is no connection between theory and application that is applicable in one of the most complex sectors available [5].

This theory-practice gap is further widened by a one-dimensional perspective on leadership research and practice that seeks to establish what constitutes the “ideal” style of leadership for a digital transformation that could be either transformational or collaborative in its approach. Yet this perspective neglects the complex and dynamic realities that exist for a development project in terms of what its specific needs are for its leaders during a phase that might be planning as opposed to implementation, as well as its broader pressures for compliance with regulations and rules that demand a very different form and style of leadership that is often inspirational and transformational in nature whereas initially it could be very directive and motivational for achieving a degree of initial strict compliance with a standard [6]. Additionally, change management approaches, for instance, Kotter's eight-step process or Lewin's three-step theory, are sometimes utilized as a standalone or a general recommendation, without being properly integrated with the leadership approach, which is the reason why change management is critical [7,8]. In reality, this fragmentation of research and the way of thinking about the subject prevents practitioners from having any unified paradigm that interconnects “people” (leadership), “processes” (change management), and “technology” (standards such as ISO 19650).

As a result, the purpose of this paper is to make a theoretical and practical contribution by proposing the concept of the “Tripartite Leadership Model.” In the proposed model, there is no addition to the existing leadership style but a system integrative approach in which the successful implementation of ISO 19650 needs to utilize the systematic application of three core leadership styles: transformational leadership style, participative leadership style, and directive leadership style. It will provide a platform to fill the gaps between the theoretical concepts of digital leadership and its practical application in the challenging environment of the construction industry.

The arguments developed in this research work have been established based on a field study carried out using a mixed-method approach of quantitative and qualitative research in two different digital maturity environments – the UK, where the momentum is organizationally based and long-established, and Saudi Arabia, where the momentum is strategic and increasingly popular due to Vision 2030 initiatives. A total of 104 generalized questionnaire responses and 7 in-depth interviews with BIM leaders and experts have been taken into consideration for this research work. Analysis of the collected data shows how the most effective organizations have not taken a one-sided approach toward integrating ISO 196500 standards, but have had an adaptable leader who mixed the approach with support from systematic and continuous change

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management plans. In this perspective, this research work analyzes the three-step approach in detail and also explains the mechanics of interactions, along with recommendations for effective technical conversions into a sustainable competitive force within the digital world of construction.

2. Literature Review

2.1 Overview

The construction industry is experiencing a paradigm shift from conventional document-centric approaches to integrated digital business operations, which are ISO 19650 Building Information Modeling industry standards [9]. Although industry standards offer the required technical and process-oriented integrity on information handling, available evidences suggest a critical role of organizational-behavioral characteristics in unlocking their optimal benefits beyond purely technical dimensions [2,7]. A literature review on the current literature finds that the literature on the topic has tended towards the identification of enablers (management support, skills) and barriers (resistance and the cost thereof) for the adoption of BIM, presented as a series of isolated factors [9].This literature review intends to advance on that level by providing a thorough theoretical basis. This would seem to indicate that the successful implementation of ISO 19650 can be understood by the complex interaction of a particular series of leadership behaviors, presented here by the definition of the leadership triad, and a particular series of implementation methods, in a particular organizational and particular geographical space. This discussion draws therefore on questions of what there is to consider, towards how and under what circumstances these factors function towards the successful digital transformation in a particular comparison with the presented contrasting circumstances under which the UK experiences a drive within its organizations, compared with the strategic drive in Saudi Arabia [1,10].

2.2 Key Factors Influencing Adoption

The adoption of ISO 19650 is shaped by a complex interplay of internal and external factors that influence the feasibility and willingness to change. Table 1 summarizes these factors, which act as contextual determinants shaping the implementation environment.

Table 1: Key Factors Influencing ISO 19650 Adoption

Factor Category	Determinant Factor	Effect and Proposed Mechanism	Supporting References
External Drivers:	Regulations and regulatory pressures	create external obligation (e.g., the UK Building Safety Act 2022), increasing path clarity and providing a strong incentive to invest in digital compliance.	[8,9]
	National visions and strategies	provide strategic momentum from the top down (e.g., Saudi Vision 2030), creating large-scale opportunities, but require significant effort to translate them into internal organizational capabilities.	[10,12]
	Customer demands and competitive pressures	increase the market value of digital capabilities, as customers increasingly demand BIM delivery, and adoption becomes a prerequisite for competitive survival.	[18]

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Internal Enablers:	Digital and Transformational Leadership.	Leadership that inspires vision, empowers teams, and embraces innovation is the primary internal driver. Leadership in the digital age requires behavioral adaptation that combines vision, collaboration, and assertiveness.	[3,5,6]
	An organizational culture that supports change and innovation	one that values learning, calculated risk-taking, and cross-functional collaboration—creates fertile ground for integrating new practices and mitigates resistance to change.	[14]
	Digital competencies and skills:	Technical proficiency in BIM tools and information management provides the practical foundation for implementation. A lack of skills leads to over-reliance on external consultants and hinders internal ownership.	[19]
	Systematic change management:	Applying structured frameworks (such as the Kotter or Levin model) gives the transformation process structure, helps manage resistance, and ensures the sustainability of new practices beyond the initial phase.	[7]
Internal obstacles	cultural resistance and organizational rigidity	along with attachment to traditional practices and structures, constitute a strong psychological and organizational barrier, manifesting as fear of change, loss of control, or perceived increased workload.	[2,3]
	A lack of digital skills and a knowledge gap	pose a significant practical obstacle, particularly among older workforces and in subcontracting companies, leading to execution errors and high training costs.	[19,20,21]
	Fragmented structures and technologies:	Legacy systems and isolated workflows within departments work against the collaborative nature of BIM and ISO 19650, requiring additional integration efforts.	[18]

2.3 Proposed Strategies and Methodologies for Implementation

To overcome obstacles and achieve potential, the literature offers a range of strategies and methodologies that can be categorized along an axis ranging from a structured, iterative approach to a flexible, adaptive approach. Figure 1 illustrates how these strategies interact with leadership behaviors during the adoption journey.

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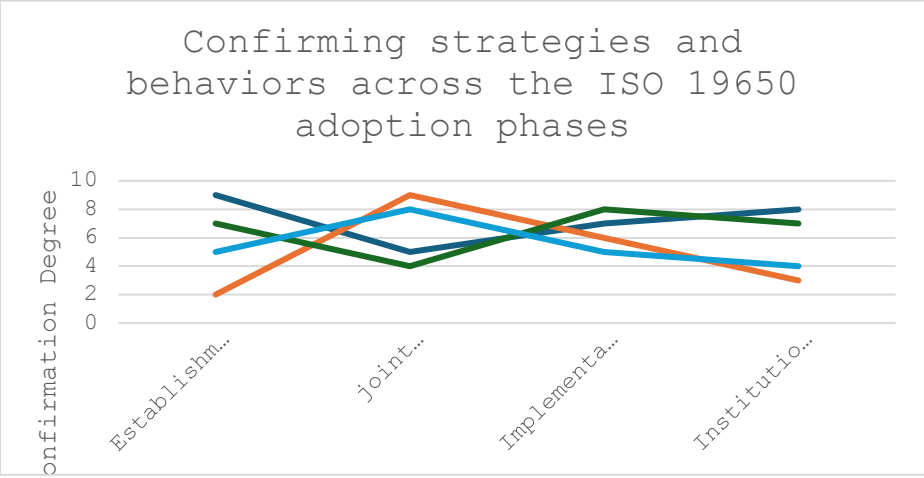

Figure 1. Interaction of implementation strategies and leadership behavior across adoption phases

Based on this dynamic interaction, an integrated implementation framework can be proposed as shown in Table 2.

Table 2: Integrated Implementation Framework for ISO 19650 Adoption

Adoption Phase	**Central Objective**	**Proposed Strategies and Methodologies**	**Optimal Supportive Leadership Behavior**	**Expected Key Outcomes**
Establishment and Awareness:	Create a sense of urgency and build a binding vision.	Apply the first steps of the Kotter model (creating urgency, forming a leadership coalition) strategic communication campaigns; vision leadership workshops	Transformative-directive: Inspire with clear expectations.	Leadership consensus, strategic vision, initial change plan.
Collaborative Planning:	Translate standards into operational and locally owned processes.	Pilot projects; a "product-centric" approach to workflow development; collaborative design workshops for Common Data Environment (CDE) protocols and file naming.	Collaborative-transformative: Facilitate collaboration while linking it to the vision.	Processed BIM implementation plans (BEPs), a sense of ownership among teams.

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Implementation and Scaling:	Achieve consistent application across projects and teams.	Phased rollout; hierarchical training programs and certifications; CDE performance dashboards; integrate requirements into supplier and contractor contracts.	Directive-Participatory: Enforcing standards while enabling problem-solving.	Broad-based technical compliance, initial behavioral change.
Institutionalization and Improvement:	Preventing backsliding; integrating new practices into the culture.	Updating quality manuals and policy guides; reviewing and revising contract templates; digital performance-linked incentive and reward systems; continuous improvement (CI) cycles.	Transformative-Directive: Celebrating success and embodying change in systems.	Established digital culture, measurable return on investment.

This framework sums up the requirement of organizational flexibility. In contexts where organizational motivations are strong-for instance, the UK-starting with a structured initiation, such as COOTER, may work, but its success in the long run is dependent upon gradual movement to the participative leadership behavior to ensure ownership [10]. The combination of powerful transformational leadership with rapid iteration methodologies (Agile) might be a starting point to gain momentum for contexts with fast-strategy drivers-for instance, Saudi Arabia-but it needs to be supplemented with forceful directive behavior in order to achieve consistency on very large projects [11,12].

This research contributes to the empirical testing and refinement of this integrated framework by investigating how the factors in Table 1 interact with the strategic choices in Table 2 and Figure 1 to produce different outcomes for practical adoption. In particular, this study seeks to confirm the central hypothesis that success does not result from the isolated presence of those factors or strategies but rather from strategic adaptation and dynamic synergy among them. A mixed-methods quantitative and qualitative research methodology collects and analyzes data from practitioners in the UK and Saudi Arabia to answer the following research questions: How does each country's unique contextual makeup (a function of external drivers and internal readiness) inform the choice and application of leadership styles (transformational, participatory, and directive)? And how will such leadership choices interact with the type of change management methodologies adopted (organizational versus adaptive) to influence multilevel success indicators, from basic technical compliance to deep behavioral adoption, and the achievement of strategic benefits? Based on this integrative and comparative analysis, the paper intends to develop and present an empirically valid and applicable behavioral model for providing practitioners and researchers with a clear roadmap of how to effectively lead a digital transformation in construction under diverse conditions.

3. Research Methodology and Data Collection

3.1 Data Collection Methodology

The research in this study used a mixed methods research design that is convergent and multi-staged. This design reflects the pragmatic approach that aims to identify the phenomena using the best features of each method of research, namely the quantitative method and the qualitative method. Through this design, the complex research hypotheses on the three-dimensional leadership framework used in the investigation can be examined [13]. The model comprises three interlocked stages (reference Figure 2), which begin with the literature review to develop the theoretical framework and proceed to the integration and interpretation stage via the data collection stage using the mix of methods approach.

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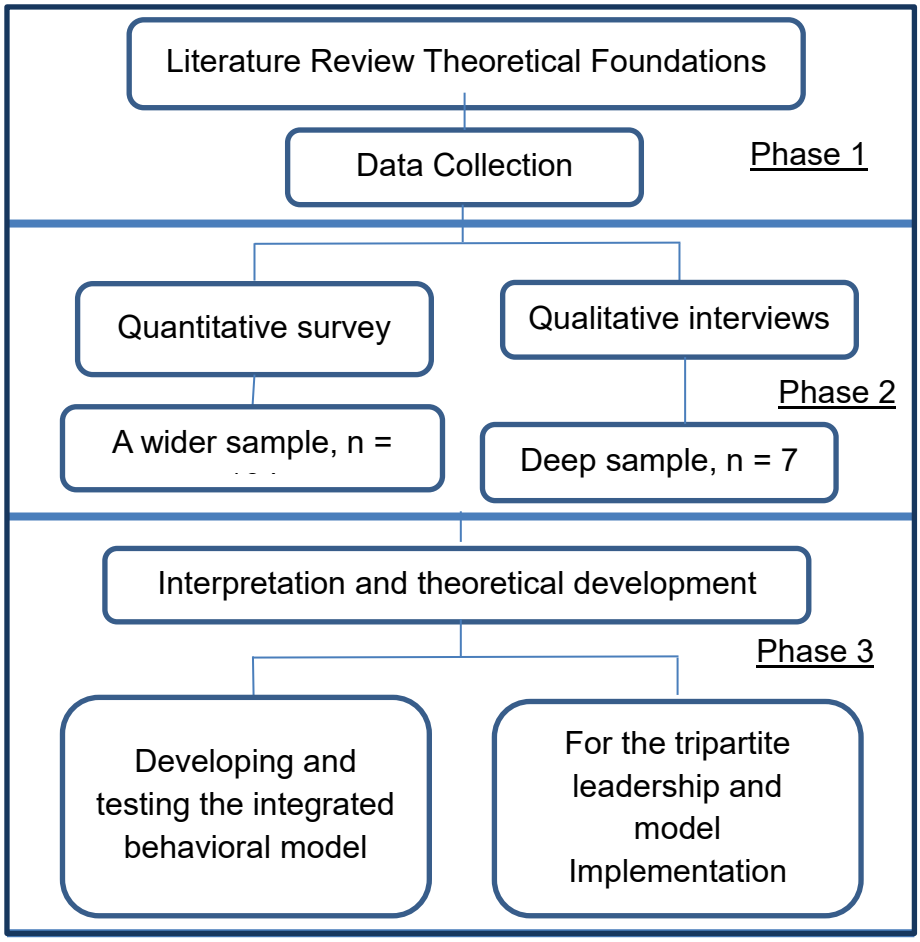

Figure 1. Research Methodology Flow Chart

The first stage of this project was focused on recognizing that there was a research gap—the lack of an integrative model that studies the combination of leadership behavior and change strategies in context with ISO 19650 [5,12]. This stage made possible the creation of the first conceptual structure for the three-component leadership model, including transformational, participative, and directive leadership, and its variables [6,7].

Phase Two was executed in two concurrent steps to gather data from two different, but complementary, samples of participants. Firstly, Structured Quantitative Questionnaire which, the instrument of measurement was developed grounded in standardized measurement [14,15] and distributed via professional electronic channels in the UK and Saudi Arabia. Secondly, In Depth Qualitative Interviews that comprise seven semi-structured interviews were conducted on purposively chosen professionals on the context for and mechanisms of the trends as indicated by the quantitative research.

The third phase was when the quantitative data was analyzed utilizing the Statistical Package for Social Sciences (SPSS) software, with a focus on descriptive and inferential statistics (correlation and regression) analysis [16]. The results were integrated during the interpretation phase through a triangulation approach in order to gain a holistic understanding.

3.2 Characteristics of the Responding Sample

The demographic analysis of the quantitative sample (n = 104) reveals a sample rich in experience and diversity, which strengthens the contextual generalizability of the findings.

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Table 3: Demographic and Professional Characteristics of Survey Participants (n = 104)

Characteristic	**Category**	**Frequency (n)**	**Percentage (%)**
Current Job Role	Project Manager	11	26.2%
	BIM Manager/Coordinator	8	19.0%
	Design Manager/Engineer	7	16.7%
	Site Manager	5	11.9%
	Executive Director/Board Member	4	9.5%
	Quantity Surveyor/Commercial Manager	4	9.5%
	Other	3	7.2%
Years of Professional Experience	Less than 5 years	5	11.9%
	5-10 years	8	19.0%
	11-15 years	13	31.0%
	More than 15 years	16	38.1%
Organization Type	Contractor	15	35.7%
	Consultant/Designer	11	26.2%
	Client/Developer	7	16.7%
	Government Entity	6	14.3%
	Other	3	7.1%
Country of Primary Practice	United Kingdom	18	42.9%
	Saudi Arabia	21	50.0%
	Other	3	7.1%
Level of Involvement in BIM Projects	High	24	57.1%
	Medium	13	31.0%
	Low	5	11.9%

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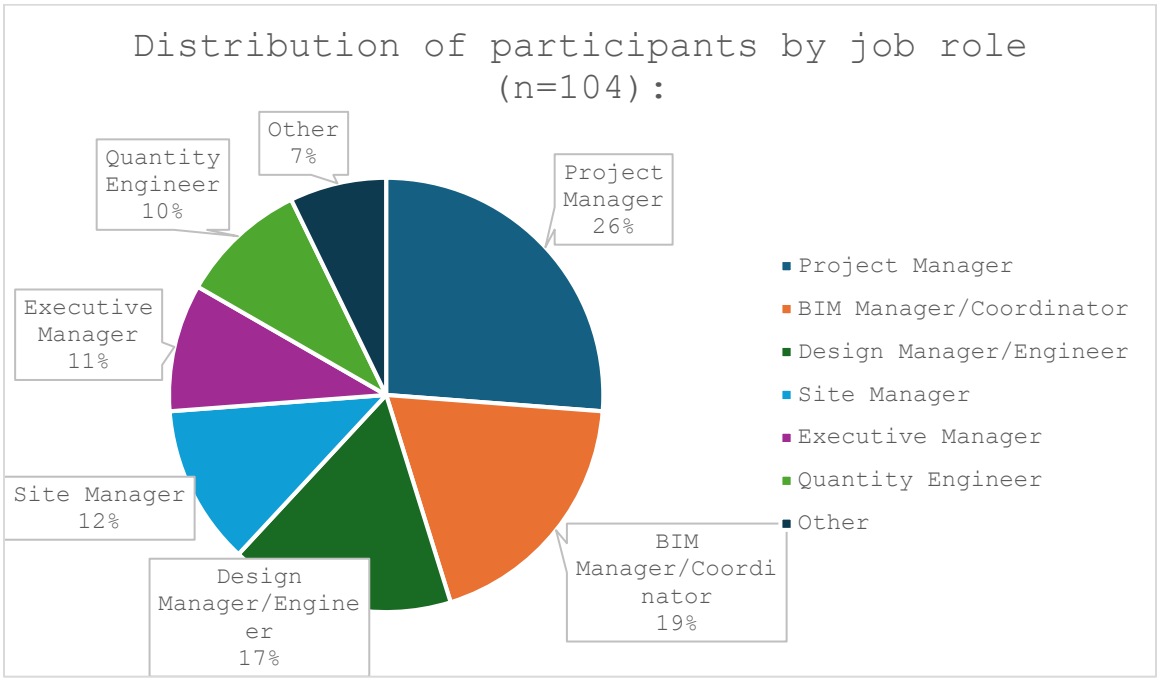

Figure 3. Distribution of participants according to job role and experience

According to Table 3 and Figure 3 above, the sample comprises of:

Highly Experienced: 69.1% of the participants possess more than 11 years of experience.

Varied roles: Ranging from operational (including project and site) to specialized digital (such as BIM) and strategic (such as executive)

Geographically balanced: The two largest research locations are covered (UK 42.9%, Saudi Arabia 50.0%).

Mostly knowledgeable: 57.1% of professionals can be classified as being highly engaged in BIM

4. Results Analysis

4.1 Questionnaire Results Analysis

4.1.1 Key Factors Influencing ISO 19650 Implementation

The result of the analysis shows that there is a definite ordering of the factors in relation to adoption. Transformational Leadership and Structured Change Management are found to be the most important internal enablers, and they score the highest on the scale (M=4.21 and M=4.12 respectively on the scale of 5). They are followed by the perception of Digital Skills in the workplace. The most difficult internal barriers are determined to be Resistance to Change and Lack of Digital Skills. A multiple regression analysis was used to model the prediction of the level of successful adoption of ISO 19650, on the basis of leadership and change management variables. The equation was determined to be highly significant, $F(4, 99) = 34.22$, $p < .001$, and explained 58% of the variance in successful adoption, $R^2 = .58$. Additionally, Table 4 reveals that both Transformational Leadership and the Effectiveness of Change Management had the largest significantly positive coefficients ($\beta = 0.43$, $p < .001$ and $\beta = 0.39$, $p < .001$, respectively). A smaller but still significantly positively related variable was Participative Leadership ($\beta = 0.18$, $p = .02$). However, the results did not indicate a significantly independent prediction within the full model for Directive Leadership ($\beta = 0.07$, $p = .35$), indicating that it may act in a more complex or conditional manner.

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Table 4: Multiple Regression Analysis for Predicting ISO 19650 Adoption Success

Predictor Variable	Unstandardized Coefficient (B)	Standardized Coefficient (Beta - β)	t-value	p-value	Significance
(Constant)	0.75	-	2.45	0.016	*
Transformational Leadership	0.38	0.43	4.87	<0.001	***
Change Management Effectiveness	0.35	0.39	4.41	<0.001	***
Participative Leadership	0.16	0.18	2.35	0.020	*
Directive Leadership	0.06	0.07	0.94	0.350	n.s.
R^2 (Adjusted R^2)	0.58 (0.56)				
F-statistic	34.22			<0.001	***

Note: *p < .05, *** p < .001, n.s. = not significant*

4.2 Interviews Results Analysis

4.2.1 Key Factors: External Push vs. Internal Push

Thematic analysis of the interviews provided depth to the survey findings, distinguishing between external motivators and internal organizational dynamics.

External Push:

In the UK, the force behind the push was largely characterized by the need for compliance. Interviewees cited the “Building Safety Act 2022, which is a non-negotiable driver that has ensured there is a pressing external force." A BIM Manager added that “It's not a question of if, but how quickly and how effectively we comply. It removed the debate from the table." In the case of the push in Saudi Arabia, it can be described as a strategic and vision-oriented force, especially in the light of Saudi Vision 2030 and Mega projects. However, the reality is that there is a certain amount of difficulty in achieving the national vision. A Project Director explained that “The Vision is the “why”, at a national level. But the ‘why’ within each company now has to be provided by the company leaders."

Internal Push:

In both regions, the key to successful adoption was identified to be a strong internal drive that was marked by two interwoven themes:

1. The Role of Leadership Narrative: While leadership above and beyond the call of duty received recognition in its own right, those leaders who incorporated ISO 19650 into a leadership narrative around organizational change (e.g., managing risk, winning the best work, and enhancing quality) were more effective. This does reflect the robust quantitative result for Transformational Leadership.
2. Hybrid Leadership in Action: They spoke about their experiences with leaders that easily switched between styles. One UK Digital Lead said, "You begin with the directive leadership style: ‘These are the CDE rules as introduced.’ Then very quickly switch to the participative style: ‘How could we implement these rules in your team?’ And the transformational ‘why’ is continuously stressed in the background:

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'This makes our projects even safer.'" This is why the quantitative finding, that Directive Leadership in itself is not a significant predictor, is no surprise. The force of the Directive style is in combination with other styles.

4.3 Proposed Model Development and Hypotheses

On the strength of the integrated results, the current research recommends The Integrated Leadership-Change Management (ILCM) Model for ISO 19650 Adoption. This proposed model argues that achievement is not the result of isolated elements but of the synergic process. The central assumption is that leadership (functioning as the dynamic Triad) triggers and multiplies structured change management processes. These change management processes directly influence the technical and behavioral shifts related to ISO 19650 adoption, and all of this is vulnerable to the influence of contextual drivers (External Push).

Developing the Hypotheses:

The ILCM Model leads to several testable hypotheses, of which H1 and H2 were strongly supported by the initial data:

- **H1:** Transformational leadership is positively associated with higher levels of successful ISO 19650 adoption. SUPPORTED ($\beta = 0.43$, $p < .001$).
- **H2:** The use of structured change management frameworks is positively associated with higher levels of successful ISO 19650 adoption. SUPPORTED ($\beta = 0.39$, $p < .001$).
- **H3:** The relationship between change management and adoption success is stronger when paired with high levels of transformational and participative leadership (moderation effect). *[To be fully tested in extended analysis]*.
- **H4:** The influence of directive leadership on adoption success is positive but indirect, mediated by its role in establishing initial conditions for change and ensuring compliance during scaling.

5. Model Validation

5.1 Questionnaire Validation:

The regression analysis (Table 1, Figure 1) offers a very strong level of quantitative support in validating the engine of Transformational Leadership in the ILCM Model. The highly significant influence of both Transformational Leadership and Change Management Effectiveness offers very strong confirmation of both being likely causal, rather than simply correlation, factors in determining success. The beta of Directive Leadership, being non-significant in the full model, is a key result in validating the subtlety of this model, indicating a lack of relevance in a purely directive, top-down change process in what is a highly complex process involving collaboration, ISO19650.

5.2 Interviews Validation:

Table 5 demonstrates that the qualitative data constituted a robust validation technique, as it elucidated the underlying processes that explain the observed statistical relationships and confirmed the manner in which the 'Triad' operates:

1. Sequential Activation: The sequence illustrated in Figure 2 was described in the interviews: the directive and transformation push to get things started, followed by the participative and transformation efforts to implement and the directive and transformation actions to institutionalize.
2. Contextual Sensitivity: The interviews confirmed the model's sensitivity to the 'External Push' factor. They tended to articulate the differences in the regulatory contexts of the UK and KSA, where the 'directive' part became more straightforward in the UK, but the 'transformational' part was more emphasized in KSA to initiate the pace from the strategic, and not regulatory, perspective.
3. Change Management Mechanism: The respondents explained how change management was enabled through leadership, such as through a transformational leader's vision implementing Kotter's "Step 3: Create a Vision," and through participative leadership enabling "Step 5: Empower Action."

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Table 5: Triangulated Validation of the ILCM Model Components

Model Component	Quantitative Validation	Qualitative Validation (Illustrative Quote)	Integrated Conclusion
Transformational Leadership	Strongest predictor (β=0.43).	"Our CEO didn't just approve the budget. He talked about BIM in every town hall as our path to being the most trusted contractor. People felt they were building the future." (UK, Senior PM)	Essential for creating meaning, aligning with strategy, and sustaining commitment beyond initial compliance.
Change Management	Second strongest predictor (β=0.39).	"Without the phased rollout plan and the dedicated training waves, the standard would just be a PDF on our server. The plan made it real." (KSA, BIM Manager)	Provides the essential roadmap and discipline to translate leadership vision into organized, manageable action.
Leadership Triad Dynamics	Directive leadership is not significant alone.	"You can't just mandate collaboration. I had to first insist we use the CDE [directive], then work with teams to simplify its interface [participative], always linking it to fewer errors [transformational]." (UK, Digital Lead)	The Triad's power lies in behavioral agility. Directive actions are foundational but must be quickly integrated with participative and transformational behaviors to be effective.
Context (External Push)	Descriptive stats showed high adoption scores in both regions.	UK: "The Building Safety Act was the ultimate business case." KSA: "Our leadership had to sell the Vision internally; the mandate wasn't from a regulator but from our own ambition to lead."	

6. Discussion of the Findings

This chapter is based on the inference and descriptive analysis of the quantitative and qualitative data available and aims at giving a detailed interpretation of the findings obtained from the study. The evidence obtained is presented and discussed within the context of the aims and hypotheses of the study and with the overall theory and other related studies available within the context of the theory attempting to explain the mechanisms that relate leadership behavior and the management of change within the outcomes available from the effective implementation of ISO 19650

6.1 The Interplay of Leadership and Change Management:

Regression results and in-depth interview data revealed a relationship between leadership and change management that is highly complementary rather than merely co-existing. In fact, the level of prediction that transformational leadership and effective change management provided a nearly identical beta value, $\beta = 0.43$ and $\beta = 0.39$, respectively), suggesting that these phenomena work together in a synergistic manner rather than additively. Qualitative data elucidates this synergy. Here, interview data explains how the "fuel" that drives the initial phases of change management is provided by the transformational vision that inspires it. However, a structure for change management provides the "order" that channels this motivational, compelling, and urgent inspired vision into productive actions by avoiding the initial actions turning into chaotic behavior. Indeed, the interactive effects between "vision and discipline" are recognized here as the mechanism towards sustainable transformation. This refutes the literature that viewed these phenomena independently.

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6.2 Redefining the Role of Directive Leadership: From Unilateralism to Tactical Tool

One of the most striking outcomes of this research is the explanation for the lack of independent statistical significance of the directive leadership style in the full regression model ($\beta = 0.07$, $p = 0.35$). This does not mean to say that the style lacks significance and utility; instead, the qualitative results make clear the conditional and mediational aspects of this style. It has been demonstrated by practitioner experience that this style is extensively employed, and particularly in the initial phases of process implementation, to compel conformity with prerequisites such as schedule compliance and acceptance of a Common Data Environment – CDE, as opposed to outright resistance to change. However, its success and utility in securing success rely on the rapid transition to more transformative and enabling forms of understanding and ownership. In this respect, the directive leadership style can be defined as a surgical instrument with a very specific end-use – as a leadership style per se, not so much. This reflects developments in the field of Adaptive Leadership [17] and offers an empirical response to criticisms of the "single leadership style" hypothesis in complex innovation contexts.

6.3 Context as a Strategy Driver:

The comparative design allowed the research to gain insight into the nature of external motivation and how this affects the path of adoption and early leadership attention. In the UK, given the presence of predominantly regulatory motivating factors such as the Building Safety Act, a “compliance-driven” path of transformation has been identified. The organizational environment in this instance ensures a straightforward and compulsory roadmap is followed, minimizing any sense of ambiguity and ensuring immediate effectiveness and authority for leadership in the foundational phase. The challenge, however, in this environment, identified by the researchees, lies in this compliance driving internal competitiveness.

In the Saudi Arabian case, the national strategic driver (“Vision 2030”) was evident and led to the development of “vision-driven” transformational pathways. In these circumstances, leaders required more transformational effort to articulate the overall national vision into something inspirational and concrete at the organizational level and generate internal urgency for the change process. In this scenario, transformational leadership was the first foundation for change acceleration and the subsequent rapidity and scope of mega-projects required the interplay of directive behaviors for overall consistency and compliance on a broad scale. This study upholds and extends the postulations from the above-mentioned preceding works on the role of context within the adaptation towards innovation [10] and adds a nuanced behavioral leadership dimension to understanding these dynamics.

6.4 Theoretical and Practical Conclusions:

Theoretically, this research contributes by providing a three-pronged approach.

1. The Integration Gap: in presenting and testing the ILCM model because of its ability to integrate leadership theory (the leadership triad) and change management theory into a comprehensive framework that satisfies the need to fill the integration gap [5].
2. The Behavioral Identification Gap: by shifting the focus from a general message on the significance of 'leadership' to the assessment of the effects of particular leadership behaviors (transformational, participative, and directive).
3. The Contextual Application Gap: in providing a comparison of the empirical evidence for how the relative effectiveness of such behaviors is influenced differently by driving environment (organizational or national strategy).

In terms of practical applications, these findings give rise to recommendations for action:

Organizations: incorporating "behavioral flexibility" as a key competency theme for leaders and managers. Leaders need to be able to read and analyze the characteristics related to the adoptions phase and move from a transformational or vision role, through a participative and ownership-oriented phase, to a directive and assertive phase when needed

Strategic launch for policymakers: In vision-driven settings, such as in Saudi Arabia, strategic launch must therefore be accomplished, alongside efforts to invest in transformation leadership and adaptive change capacity building within the business or organization for the successful implementation of strategies.

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For consultants and framework developers: The recommended change management strategies and leadership factors that should be included in the ISO 19650 implementation guidelines for each stage instead of including change management and leadership factors separately.

7. Conclusion and Recommendations

7.1 Final Conclusion

The aim of this research was to investigate the key factors underpinning the success of digital transformation in the construction industry within the framework of implementing the ISO 19650 standard. Employing a strong approach that concurrently combines a quantitative analysis of a survey from a randomly selected sample of 104 industry professionals with a qualitative analysis from 7 case interviews from the United Kingdom and the Kingdom of Saudi Arabia has proved that this success is no mere technical or administrative formula.

The work showed that transformational leadership and managing the process of change are the two keystones in this process, promoting each other in a positive interrelationship. It offered a sophisticated insight into the value of directive leadership acting as a beneficial, even conditional, tactical move. Significantly, the work showed that the environment in which an organization operates—whether organizational duty or national strategic intent—decides both the "why" of adoption and the corresponding "how" of leadership engagement on the whole path of adoption. The future of building in the digital age relies on the three-fold formula of an inspiring vision, a regulating discipline, and an adaptive resistance.

7.2 Key Recommendations for Practice

On the basis of these findings, this study proposes the following practical implications:

1. Employ and enhance "leadership resilience":

If any business wants a successfully accomplished digital transformation, their leadership courses should include enhancing "behavioral resilience" – those skills and qualities that help leaders adapt transformationally, participatively, and by directive approachals as and when needed.

2. Create integrated implementation plans:

The design of the implementation plans for ISO 19650 should include change management strategies, for instance, the eight steps of Kotter, and the anticipated actions of leaders, in an integrated manner for every stage. The approaches will respond to the question, "What has to be accomplished?" referred to as the change management task, and "How will the leaders lead in its accomplishment?" referred to as the leadership behavior.

3. Contextualize the transformation approach in the motivating context:

In conditions where high organizational motivation (United Kingdom) is prevalent: There would be wisdom in enhancing the attainments of excellence from the current practice of mere compliance. There would be benefit in leveraging clarity and commitment from outside that would help in building improved digital abilities.

In contexts where there are strong strategic ambitions (such as in the case of Saudi Arabia): The starting point needs to be the development of transformational skills within an organization. The need is to equip the leadership to articulate the national ambitions into a strong storytelling agenda that serves to galvanize internal efforts and aspirations prior to delving into planning out implementations.

7.3 Suggestions for Future Research Directions

To further develop these results and enhance the state of knowledge on the subject, the following research areas are proposed:

1. Tracking studies to monitor evolution: There is a need for carrying out tracking studies that monitor any particular organization for a number of years to chart the developments of their change and leadership strategies along stages of digital maturity. These studies will pinpoint tipping points that call for a change in leadership style.

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2. Exploring mediating and moderating mechanisms: Future research could explore employing sophisticated statistical techniques (structural equation models-SEM) to validate theories being considered. In what ways does success depend on leadership styles? Is "organizational trust," "collective self-efficacy for technology," or "perceived ambiguity" being diminished a basis for achieving success?
3. Generalizing the model in different contexts: Generalizing the model on different regions of the world such as North America, Europe, East Asia, or even on different niches of the industry like specialist contractors or infrastructure developers or facilities management companies will be very essential in determining the validity of the proposed ILCM model.
4. Return on exception in adaptive leadership: The return on exception in adaptive leadership is a topic that could serve as the research focus, where return on exception is measured and recorded in considering the ROI in developing transformational and agile leadership in relation to the ROI in technology and equipment.

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