

Interaction Between Public Sector BIM Adoption and Government Policy with Assistance of a Systematic Literature Review



4th CitA BIM Gathering 26th September 2019, Galway, Ireland.



CitA



Handbook for the introduction of Building Information Modelling by the European Public Sector

Strategic action for construction sector performance: driving value, innovation and growth



Roadmap to Digital Transition

For Ireland's Construction Industry 2018-2021

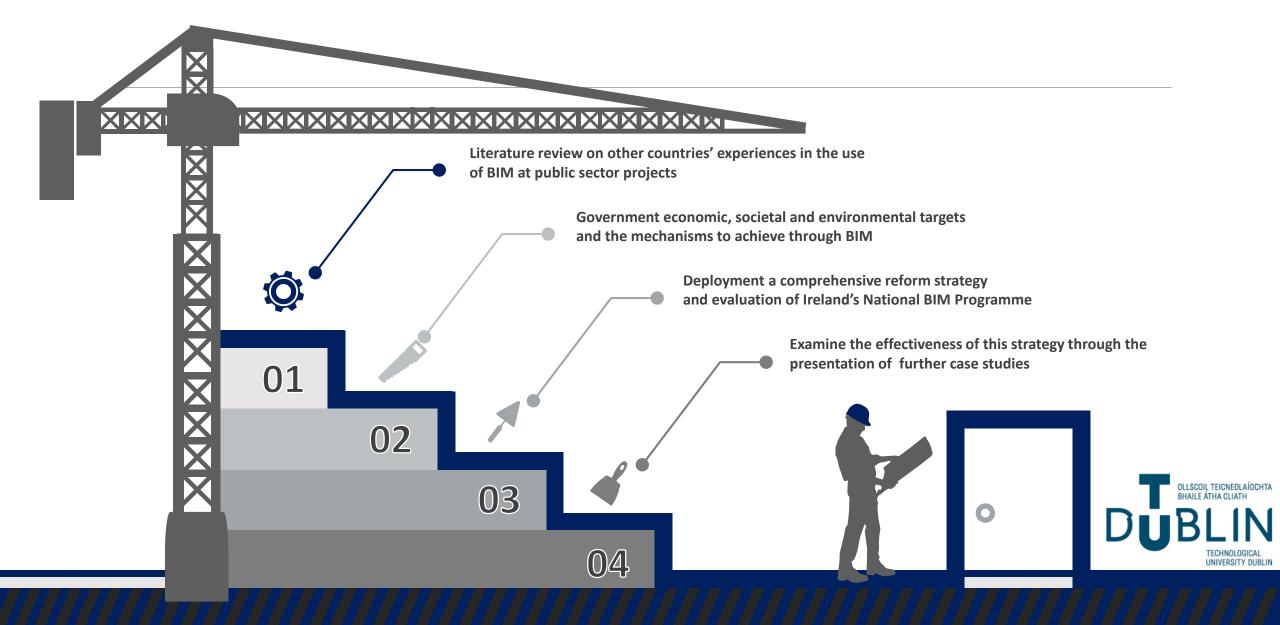


- World Economic Forum Future of Construction Series
- CitA Global BIM Adoption Study 2017
 - 27 countries
 - Recurring themes
 - Lessons for Ireland
- EU BIM Handbook
- BIM in Ireland 2017
- NBC Roadmap for Digital Transition of the Irish Construction Industry

Delivering **better outcomes** for Irish Construction

Ireland.

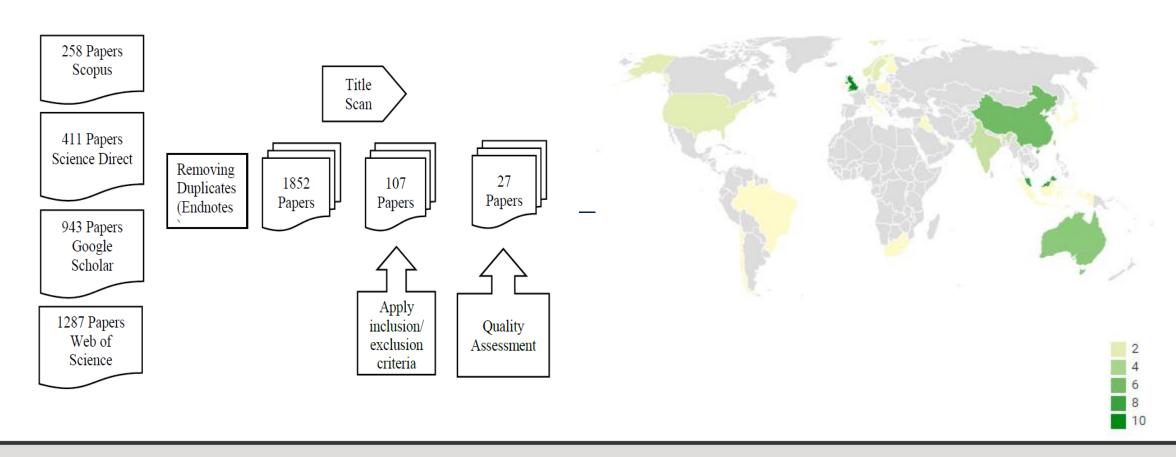
Research Roadmap





Systematic Literature Review







BIM Government Drivers

- 3D visualisation
- Collaboration improvement
- Reduced time and cost
- Collision detection
- Advancement in quality
- Reduced contingency
- Improved accuracy
- Energy efficiency
- Reduced rework

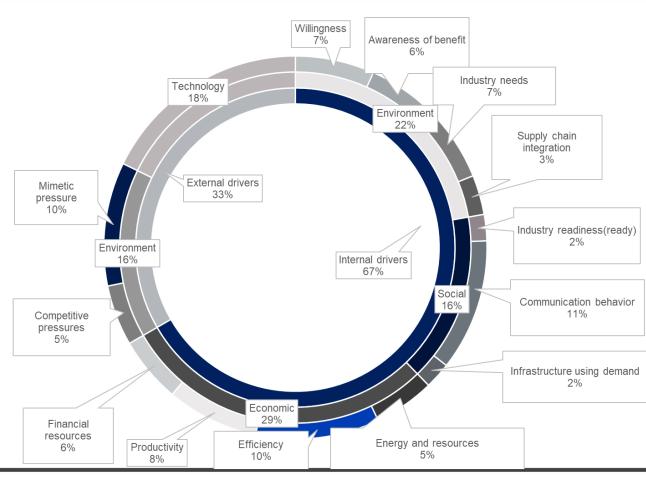
ID	Authors	RQ1	RQ2	Title
S1	V 1 Ch (2018)	0.50	0.50	Mind and Application of the Appl
31	Yang and Chou (2018)	0.30	0.30	Mixed approach to government BIM implementation policy: An empirical study of Taiwan
S2	Kassem and Succar (2017)	0	1.00	Macro BIM adoption: Comparative market analysis
S3	Mamter et al. (2017)	0	0	Stimulating a Sustainable Construction through Holistic BIM Adoption: The Root Causes of Recurring Low BIM Adoption in Malaysia
S4	Ahmed and Kassem (2017)	0	0	A Conceptual Model for Investigating BIM Adoption by Organisations
S5	Mamter and Aziz (2016)	0.50	0	Holistic BIM Adoption and Diffusion in Malaysia
S6	Attarzadeh et al. (2015)	1.00	0	Identifying key factors for building information modelling adoption in Singapore
S7	Succar and Kassem (2015)	0	1.00	Macro-BIM adoption: Conceptual structures
S8	Haron et al. (2015)	0	0.50	An Industrial Report on the Malaysian Building Information Modelling (BIM) Taskforce: Issues and Recommendations
S 9	Hadzaman et al. (2015)	0	1.00	BIM roadmap strategic implementation plan: Lesson learnt from Australia, Singapore and Hong Kong
S10	Hatem et al. (2018)	1.00	0	Analysis of the Benefits for Adopting Building Information Modelling (BIM) in Iraq
S11	Enegbuma et al., (2018)	0	0	Preliminary building information modelling adoption model in Malaysia A strategic information technology perspective
S12	Memon et al. (2014)	0.50	0	BIM in Malaysian construction industry: Status, advantages, barriers and strategies to enhance the implementation level
S13	Smith (2014)	0	1.0	BIM Implementation – Global Strategies
S14	McAuley et al. (2014)	0	0	Aligning BIM and Lean Methodologies within Capital Works Management Framework in Ireland
S15	Atkinson et al. (2014)	0	0.50	Government's influence on the implementation of BIM
S16	Nepal et al. (2014)	0.50	0	Evaluations of BIM: Frameworks and Perspectives
S17	Cheng and Lu (2015)	0	0.50	A review of the efforts and roles of the public sector for BIM adoption worldwide
S18	Edirisinghe and London (2015)	0	1.0	Comparative Analysis of International and National Level BIM Standardization Efforts and BIM adoption
S19	Blanco and Chen (2014)	0.50	0	The Implementation of Building Information Modelling in the United Kingdom by the Transport Industry
S20	Wang and Song (2017)	0	0	The relation of perceived benefits and organizational supports to user satisfaction with building information model (BIM)
S21	Ghaffarianhoseini et al. (2017)	0.50	0	Building Information Modelling (BIM) uptake: Clear benefits, understanding its implementation, risks and challenges
S22	Liao and Teo (2017)	0	0	Critical Success Factors for enhancing the Building Information Modelling implementation in building projects in Singapore
S23	Liu et al. (2017)	0	0.50	Review and Prospect of BIM Policy in China
S24	Hore et al. (2017a)	0	1.0	Establishing Lessons for Ireland's BIM Policy Through a Systematic Review of International BIM Programmes
S25	Hore et al. (2017b)	0	1.0	BICP Global BIM Study-Lessons for Ireland's BIM Programme
S26	Ahmed et al. (2017)	0	0	A comprehensive identification and categorisation of drivers, factors, and determinants for BIM adoption: A systematic literature review
S27	Davies et al. (2015)	0	0.50	BIM in Europe: innovation networks in the construction sectors of Sweden, France and the UK

26th September 2019, Galway, Ireland.



BIM Government Drivers

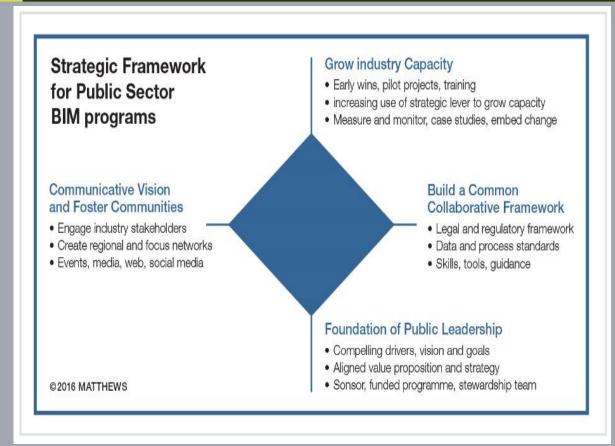






Exemplars of Government Frameworks







The BIM Adoption Cycle (WEF, 2018 PP. 6)

Strategic framework (EU BIM Group, 2018, pp. 24)

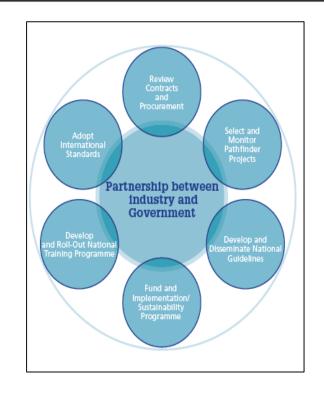
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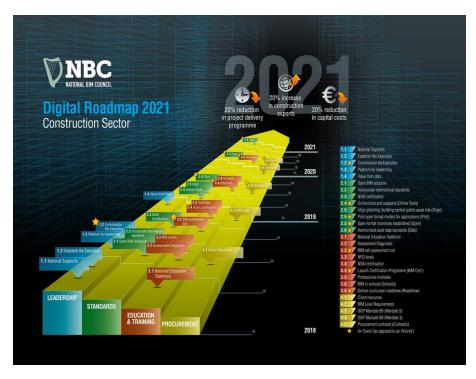


Government Frameworks to Adopt BIM















Conclusion

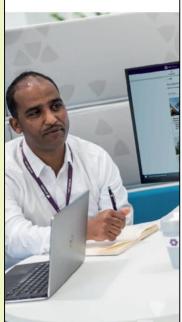
- Universal awareness of BIM in Ireland
- Similar sentiments to that in the UK
- Alternative approaches taken by international governments
 - Top down
 - Middle out
 - Bottom up
- Learning from the UK significant
- Imminent implementation of NBC Roadmap
- Time for support framework



BIM in Ireland

National BIM F

The definitive industry updat





Market intelligence coordinator, NBS



As we reflect on the ninth NRS National RIM survey, and the progress that the industry has made during that time, other countries around the world are also undertaking a journey of digital transformation. Many countries look at the UK construction industry and the Government's BIM mandate with interest: they are keen to see the results of such a mandate, and are looking to learn from our experience of adopting BIM in the UK.

Ireland is one of those countries undertaking their own digital transformation, and during 2019 NRS and CitA (Construction IT Alliance) undertook our first BIM survey, specifically for design professionals in Ireland. We had 116 responses to the survey from across all of the Irish regions. Those respondents were from a mixture of disciplines, including architects, architectural technologists, BIM managers, building services engineers and structural engineers, among others. Thank you to everyone who took part.

The survey included a number of the questions used in our UK survey, and has enabled us to compare key results across the UK and Ireland.



Before exploring BIM adoption, we wanted to understand whether neonle re aware of BIM and how this

In both the UK and Ireland, design

professionals are facing challenges to

to BIM adoption are a lack of in-house

(in particular, the lack of expertise and

related lack of training) are not unique to

Ireland, but are more prevalent. The UK

likely to see the lack of an established

as a barrier, and a higher proportion of people questions the benefit of adopting BIM.

to ensure BIM's effective adoption, but

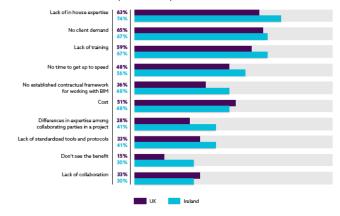
There are clearly procedural challenges that Ireland needs to overcome for BIM to BIM adoption. In Ireland, the main barriers become fully embedded. But respondents, especially those who are already using BIM, expertise (74%), no client demand (67%) recognize the advantages that BIM adoption and a lack of training (67%). These challenges brings: 83% of users believe that BIM increases the coordination of construction documents, and 64% that it brings cost efficiencies. Perhaps more importantly has, over time, started to overcome these though, both current users and non-users challenges. Those in Ireland are also more believe that clients and (to a lesser extent) contractors will increasingly demand contractual framework for working with BIM the use of BIM

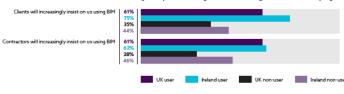
Access to information and support is crucial

BIM progress in Ireland

The survey results are promising for Ireland BIM awareness is universal, and adoption is matching that in the UK. It is clear that Ireland is at an earlier point of its BIM journey, as evidenced by fewer people achieving Level 2 BIM; however, the benefit of BIM adoption are widely recognized due to a number of successful projects that have applied Level 2 BIM processes. There is an expectation that both clients and contractor will increasingly insist on BIM, and therefor nine out of ten respondents expect to be using BIM within the next one to five years

Top 10 barriers to adoption in Ireland





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Thank you