Building Information Modelling in the Architecture, Engineering & Construction Sector

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Aim of the Project

The aim of the dissertation is to research Building Information Modelling (BIM) in the Architecture, Engineering and Construction (AEC) sector.

Background

What is BIM?

Building Information Modelling is a process of designing and managing a building across its' lifecycle. Revit, Navisworks and Civil3D are software's used for BIM design.

What is the role of BIM in the AEC?

BIM has multiple leading qualities such as 3D visualisation and integrated design. These qualities assist projects in the AEC by providing advantages such as cost reduction, improved collaboration between workforces and clash detection.

Project Objectives

1. Conduct a literature review to gain extensive background knowledge on BIM in the AEC sector.
2. Gather primary research in the form of a questionnaire or interviews.
3. Gather secondary research in the form of case studies.
4. Compile the findings from all the research and investigate how BIM can be implemented into companies in the AEC sector.
5. Based on the research findings provide recommendations for the future of BIM in the AEC sector.

Student's Studying BIM

JEDT
18,2

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Table III.
Participants' roles within industry

Participants role	BIM Group No. of students	(%)	Non BIM Group No. of students	(%)
Civil engineer	12	14.63	9	34.62
QS	16	19.51	7	26.92
M&E engineer	13	15.85	0	0.00
Estimator	3	3.66	3	11.54
Site manager	1	1.22	3	11.54
Buyer	1	1.22	0	0.00
Project manager	4	4.88	1	3.85
Designer	18	21.95	3	11.54
Other	13	15.85	0	0.00
Not working in industry	1	1.22	0	0.00
Total	82	100	26	100.00

Figure 1: Student Groups who study BIM in the UK and Ireland

For BIM culture to grow and diversify the changes need to begin in colleges. Figure 1 is a table taken from a research paper indicating the number of students in courses that relate to jobs in the AEC sector and the percentage of students that are in BIM groups and non-BIM groups.

Case Study – BIM in Ireland

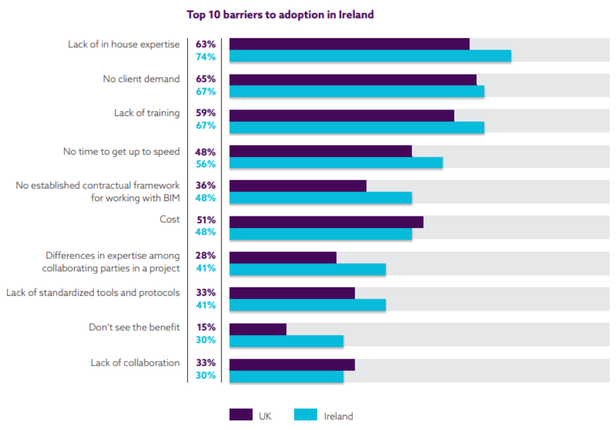

Figure 2: BIM adoption barriers in Ireland

Figure 2 is a graph of BIM adoption barriers in Ireland that was created from a survey sent to workers in the AEC sector. Note the top 4 percentage barriers are being hurdled by training in colleges.

Case Study – Digital Divide

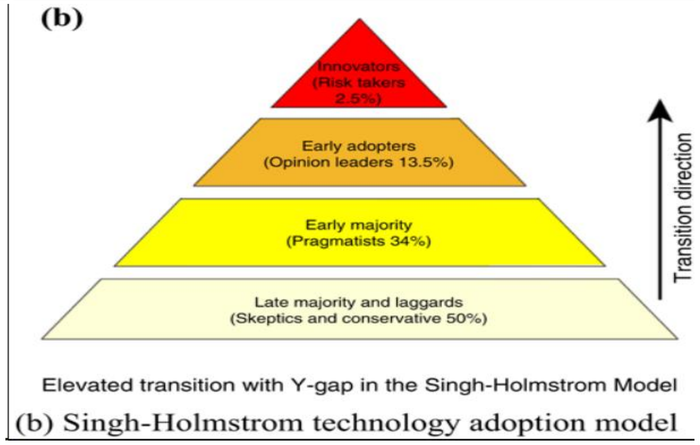

Figure 3: Digital Divide Gap

The digital divide gap in BIM technology adoption is a serious issue. The pyramid above shows percentages of companies and how likely they are to adopt BIM. The late and early majority make up 84% of this pyramid. Therefore, it is unlikely these organizations will adopt BIM until the early adopters and innovators decide to. The unfortunate finding is that the late majority lack financial resources to invest, and the early majority wait to invest until the market is suitable. Industry recognition and mandates are needed to push companies in these regions to adopt BIM

The Future of BIM

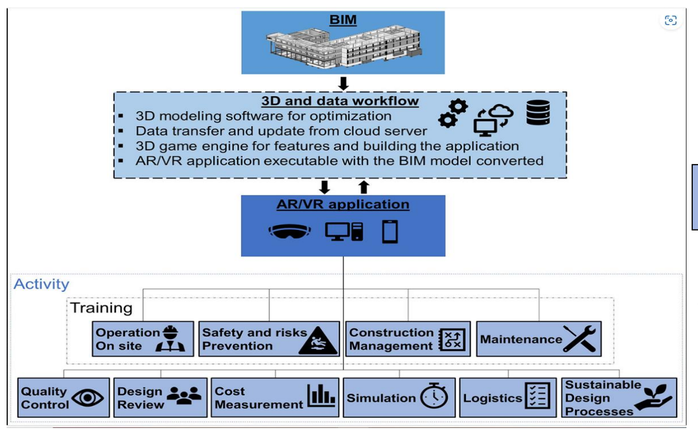

Figure 4: VR and BIM Integration

CAD to BIM Services

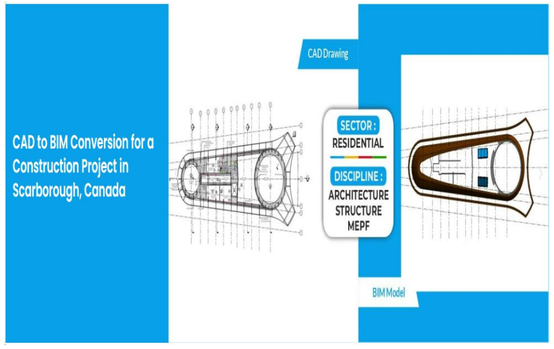

Figure 5: CAD to BIM

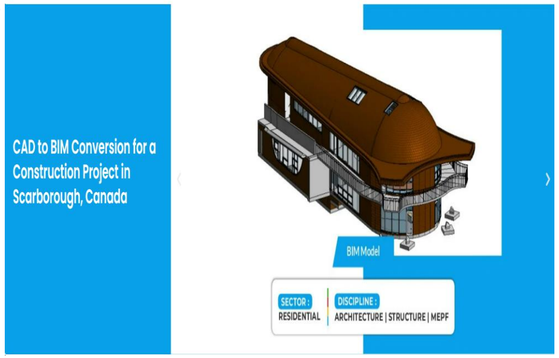

Figure 6: CAD to BIM Finished Model

Conclusions

- BIM has tools to become a leading software.
- Students are leading the advancement of BIM.
- Tax breaks and incentives will drive companies to invest in BIM.

References

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