

Index

Chapter 1 Introduction.....	1
1.1 Background.....	1
1.1.1 Steel and construction industry	2
1.1.2 Research problem	3
1.1.3 Research Objectives	3
1.3 Methodology.....	4
1.4 Dissertation structures.....	6
Chapter 2 Utilization of BIM in Steel Building Projects: A Systematic Literature Review ..	7
2.1 Introduction	8
2.2 Materials and Methods	12
2.3 Results	17
2.4 Discussion and conclusion	23
Chapter 3 Integration of BIM in Steel Building Projects (BIM-DFE): A Delphi Survey	24
3.1 Introduction	26
3.2 Literature Review	28
3.3 Research Methodology	34
3.4 Results	40
3.5 Discussion and conclusion	51
Chapter 4 BIM in Steel Building Following BIM-DFE Methodology: A Case Study.....	52
4.1 Introduction	54
4.2 BIM-DFE.....	58
4.3 Research Methodology	60
4.4 Case Study 1 CAD-BIM Application.	63
4.5 Case Study 2: BIM-DFE Application.	76
4.6 Results	93
4.7 Discussion and conclusion	98
Chapter 5 Discussion of the results	99
5.1 Research Question Q1	99
5.2 Research Question Q2	108

5.3 Research Question Q3	123
Chapter 6 Conclusions, contribution, future directions and limitations	129
6.1 Research Question Q1.	129
6.2 Research Question Q2.	133
6.3 Research Question Q3.	135
References	137
Appendix	149