## **Contents**

Title	Content	Pg.No
	Declaration by Research Scholar-Originality of	I
	Research Work	
	Certificate of Supervisor	II
	Thesis Approval Form	III
	Declaration by Research Scholar – Submission of Thesis	IV
	Acknowledgement	V
	Contents	VI
	List of Figures	X
	List of Tables	XII
	Abstract	XIV
Chapter: 1	Introduction to Data Centre	1
	1.1 Introduction	1
	1.2 The Objective of the Study	2
	1.3 Statement of the Problem	3
	1.4 Need of the Proposed Research	4
	1.5 Limitation of Study	4
	1.6 Advantage of the Study	5
	1.7 Scope of the Study	6
	1.8 Challenges of the Study	6
	1.9 Organization of the Thesis	7
	References	7
Chapter: 2	Literature Review	9
-	2.1 Introduction	9
	2.2 Previous Work Around Data Centre	9
	References	16
Chapter: 3	<b>Understanding of Different Types of Data Centre</b>	20
•	3.1 Introduction	20
	3.2 Characteristics of Data Centre	20
	3.3 Different Types of Data Centres	25
	3.3.1 Traditional Data Centre	25
	3.3.2 Cloud Data Centre	26

	3.3.3 Colocation Data Centre	26
	3.3.4 Hybrid Data Centre	27
	3.3.5 Edge Data Centre	27
	3.3.6 Micro Data Centre	28
	3.4 The Standard for Data Centre Design and	28
	Infrastructure Certifications	
	3.4.1 ANSI RIA-942	29
	3.4.2 Uptime Institute	30
	3.5 Study of Indian Data Centre and his Facility	33
	3.5.1 Ctrls Data Centre	33
	3.5.2 Reliance Data Centre	33
	3.5.3 Gujarat State Data Centre	34
	3.5.4 BSNL Data Centre	34
	3.5.5 Sify Data Centre	35
	3.5.6 ESDS Data Centre	35
	3.5.7 Tata Communications Data Centre	36
	3.5.8 Webwerks Data Centre	36
	3.6 Cloud Computing Service Models	37
	3.6.1 Infrastructure as a Service	37
	3.6.2 Platform as a Service	38
	3.6.3 Software as a Service	38
	References	39
Chapter: 4	Survey and Problem Identified of GIDC (Lodhika)	42
	Industrial Association	
	4.1 Introduction	42
	4.2 Visit GIPL (Guj Info Petro Ltd.) Data Centre	45
	Gandhinagar	
	4.3 Visit Sheela Foam Data Centre	46
	4.4 Request for Provide Permission Google Data Centre	46
	Visit	
	4.5 Visit Centre of Excellence GLIA-METODA	46
	4.6 Visit GLIA and Understand his Requirement	47
	4.7 Online Survey for Data Centre Questionnaire	48

	4.8 Online Survey for which Types of Data Centre are	49
	You Preferred	
	4.9 Online Survey for On-Premises and Cloud Data	50
	Centre Compared	
	4.10 Offline Survey for Industrial units using on-Premises	50
	Data Centre Facility	
	4.11 Proposed Town Data Centre for Small Industrial	53
	Area	
	References	55
Chapter: 5	Proposed Design for Town Data Centre of Small	57
	Industrial Area	
	5.1 Introduction	57
	5.2 Town Data Centre Design Considerations	58
	5.3 Town Data Centre Site Selection	59
	5.4 Rajkot City Climate	63
	5.5 Raised Floor Plane	65
	5.6 Local Government Permission	66
	5.7 Infrastructure Design and Planning	66
	5.8 Town Data Centre Rack Deployment Design	69
	5.9 Town Data Centre Power Supply Design	72
	5.10 PGVCL Power Supply	74
	5.11 Town Data Centre AIR Cooling Design	79
	5.12 Town Data Centre Server Design	81
	5.13 Town Data Centre Network Design	85
	5.14 Town Data Centre Security Design	91
	5.15 Town Data Centre Software and Certificate	92
	5.16 Town Data Centre Technology Architect	95
	5.17 Cost and Revenue of Town Data Centre	100
	References	101
Chapter: 6	Recommendation Machine Learning Model for Data	103
	Centre Design	
	6.1 Introduction	103
	6.2 Predictive Modeling	104

	6.3 Recommendation System	104
	6.4 Hybrid Recommendation System	107
	6.5 K-means clustering	110
	6.6 Nearest Neighborhood	111
	6.7 Cosine Similarity	111
	6.8 Matrix Factorization	112
	6.9 Vector Space Model	113
	6.10 Model 1 Item-Based Hybrid Recommendation	114
	System	
	6.11 Model 2 Cosine Similarity Unsupervised	120
	Recommendation Systems	
	6.12 Model 3 Content-Based Supervised	123
	Recommendation System	
	6.13 Model 4 Random Forest is a Supervised Machine	126
	Learning Algorithm	
	6.14 Model 5 Content-Based Supervised Machine	132
	Learning Algorithm	
	References	135
Chapter: 7	Conclusion and Future Enhancement	136
	7.1 Conclusion	136
	7.2 Future Enhancement	138
	Bibliography	139
Appendix A	Plagiarism Report	141
Appendix B	Publication	142
Appendix C	Conference Certificates	170
Appendix D	Abbreviation and Keywords	174