EVALUATION OF DISASTER RESPONSE MANAGEMENT IN IRAQ RESULTING FROM TERRORISM

Hajer Faek Kudear AL-Dahash

Ph.D. Thesis **2017**

EVALUATION OF DISASTER RESPONSE MANAGEMENT IN IRAQ RESULTING FROM TERRORISM

Hajer Faek Kudear AL-Dahash

School of the Built Environment

The University of Salford

Salford, UK

Submitted in Partial Fulfilment of the Requirements of the

Degree of Doctor of Philosophy

November 2017

TABLE OF CONTENTS

TABLE OF CONTENTS ..... **I**

LIST OF FIGURES ..... **VIII**

LIST OF TABLES ..... **XII**

ACKNOWLEDGEMENTS ..... **XIII**

DEDICATION ..... **XIV**

DECLARATION ..... **XV**

ABBREVIATIONS ..... **XVI**

ABSTRACT ..... **XVII**

CHAPTER 1 INTRODUCTION **1**

1.1 Research Background 1

1.2 Research Problem 4

1.3 Aim, Objectives and Research Questions 8

1.3.1 Aim 8

1.3.2 Objectives 8

1.3.3 Research Questions 9

1.4 Scope of the Study 9

1.5 Research Methodology 9

1.6 Contribution to Knowledge 10

1.7 Organisation of the Thesis 11

1.7.1 Chapter 1: Introduction 11

1.7.2 Chapter 2: Literature Review 11

1.7.3 Chapter 3: Research Methodology 11

1.7.4 Chapter 4: Data Analysis and Interpretation of Results 12

1.7.5 Chapter 5: Research Findings 12

1.7.6 Chapter 6: Conclusion 12

1.8 Chapter Summary 12

CHAPTER 2 LITERATURE REVIEW **13**

2.1 Introduction 13

2.2 Defining Disaster 13
2.3 Statistics about Disasters 15
2.4 Types of Disasters 16
2.4.1 Natural Disaster 18
2.4.2 Human-Made Disaster 18
2.4.3 Hybrid Disasters 20
2.5 Terrorism 22
2.6 Disaster and Conflict 24
2.7 Disaster Management 25
2.7.1 Disaster Management Cycle 26
2.8 Disaster Response Management 28
2.8.1 Aims of Disaster Response Management 32
2.8.2 Disaster Response Activities 33
2.8.3 The Stages of Disaster Response Management 35
2.9 Challenges during Disaster Response Management 43
2.9.1 Planning Stage Challenges 43
2.9.2 Organising Stage Challenges 47
2.9.3 Directing Stage Challenges 53
2.9.4 Controlling Stage Challenges 58
2.10 Disaster Response Management Good Practice 62
2.11 Disasters in Iraq 67
2.12 Statistics about Terrorist Operations in Iraq 68
2.12.1 Number of Overall Incidents in Iraq Caused by Terrorists 68
2.12.2 Types of Incidents Caused by Terrorists 68
2.12.3 Number of Killed and Injured in Terrorist Operations 70
2.13 Disaster Management in Iraq and Countries Surrounding Iraq 72
2.13.1 Disaster Management in Iraq 72
2.13.2 Disaster Management in Countries Surrounding Iraq 74
2.14 Chapter Summary 77
CHAPTER 3 RESEARCH METHODOLOGY 78
3.1 Introduction 78
3.2 Research Methodological Design 78
3.3 Research Philosophy 80
3.4 Research Approach 81
3.5 Research Strategy 82
3.5.1 Case Study Design 85

3.6 Research Choices 88
3.7 Time Horizon 89
3.8 Research Techniques 89
3.8.1 Data Collection Techniques 90
3.8.2 Sampling of Participants and Interviewees 93
3.8.3 The Pilot Study 95
3.8.4 The Main Study 96
3.8.5 Objectives of the Study and how they are addressed through the Data Collection Methods 97
3.9 Data Analysis Process 98
3.9.1 Analysis of Questionnaire Surveys 98
3.9.2 Analysis of Semi-Structured Interviews 99
3.10 Validity and Reliability 103
3.10.1 Validity of the Recommendations 103
3.11 Research Methodological Framework 104
3.12 Ethical Approval 106
3.13 Chapter Summary 107
CHAPTER 4 DATA ANALYSIS AND INTERPRETATION OF RESULT 108
4.1 Introduction 108
4.2 Case Study Background 108
4.3 Interview Analysis – Planning Stage 110
4.3.1 Weaknesses during the Planning Stage 110
4.3.2 Strengths during the Planning Stage 124
4.3.3 Recommendations for the Planning Stage 129
4.3.4 Planning Stage Summary 133
4.4 Interview Analysis – Organising Stage 135
4.4.1 Weaknesses during the Organising Stage 135
4.4.2 Strengths during the Organising Stage 145
4.4.3 Recommendations for the Organising Stage 147
4.4.4 Organising Stage Summary 150
4.5 Interview Analysis – Directing Stage 152
4.5.1 Weaknesses during the Directing Stage 152
4.5.2 Strengths during the Directing Stage 162
4.5.3 Recommendations for the Directing stage 166
4.5.4 Directing Stage Summary 168
4.6 Interview Analysis – Controlling Stage 170
4.6.1 Weaknesses during the Controlling stage 170

4.6.2 Strengths during the Controlling Stage 175
4.6.3 Recommendations for the Controlling Stage 178
4.6.4 Controlling Stage Summary 180
4.7 Summary of the Interview Analysis 182
4.8 Implementation of Disaster Response Management Factors 183
4.8.1 Implementation of Disaster Response Management Factors at the Planning Stage 183
4.8.2 Implementation of Disaster Response Management Factors at the Organising Stage 187
4.8.3 Implementation of Disaster Response Management Factors at the Directing Stage 189
4.8.4 Implementation of Disaster Response Management Factors at the Controlling Stage 193
4.9 Summary of the Questionnaire Survey Analysis 194
4.10 Document Analysis 195
4.10.1 Number of Killed in the General Directorate of Civil Defence in Baghdad and the Provinces 196
4.10.2 Staff Shortage 197
4.10.3 Unfit to Work (Medically Classified) 198
4.10.4 Projects Classification 200
4.10.5 The Required Number of Civil Defence Centres in the Province of Baghdad 201
4.10.6 The Status of the Fire Nozzles in the Province of Baghdad 202
4.10.7 Summary of Document Analysis 202
4.11 Chapter Summary 203
CHAPTER 5 RESEARCH FINDINGS 204
5.1 Introduction 204
5.2 Weaknesses during Disaster Response Management 204
5.2.1 Coordination between Organisations and Commanding the Scene 205
5.2.2 Endowment of Equipment, Tools and Infrastructure 208
5.2.3 Citizens' Irresponsible Intervention 209
5.2.4 Education on Disaster Risk 211
5.2.5 Difficulties in Reaching the Disaster Scene 213
5.2.6 Security Situation 213
5.2.7 Unplanned Random Development 214
5.2.8 Lack of Staff 215
5.2.9 Individual Mistakes and Mistake in Decision Making 216
5.2.10 Misuse of Machines, Equipment and Material 218
5.2.11 Security cordon 218
5.2.12 Financial Resources 219
5.2.13 Planning Process 220
5.2.14 Supporting Ordinances 226
5.2.15 Coordination within the Organisation 228

5.2.16 Correspondence Delays and Red Tape 229
5.2.17 Nepotism and Cronyism 229
5.2.18 Employees' Rights 230
5.2.19 Hierarchy and Centralization Problems 230
5.2.20 Staff Movement and Reduction of Sections 231
5.2.21 Communication and Information 232
5.2.22 Frequent Blackouts for the National Electricity 233
5.2.23 Morale and Financial Incentives 233
5.2.24 Providing the Right Relief Supplies for People in Need at the Right Time 234
5.2.25 Speed of response 235
5.2.26 Risk Assessments 236
5.3 Summary of the Weaknesses 237
5.4 Strengths during Disaster Response Management 237
5.4.1 Endowment of Equipment, Tools and Infrastructure 238
5.4.2 Disaster Response Team Characteristics 239
5.4.3 Education about disaster risk 239
5.4.4 Planning Process 240
5.4.5 Supporting Ordinances 242
5.4.6 Coordination 243
5.4.7 Decision-Making 244
5.4.8 Morale Incentives 245
5.4.9 Feedback 245
5.5 Summary of the Strengths 246
5.6 Recommendations for Disaster Response Management 246
5.6.1 Endowment of Equipment, Tools and Infrastructure 247
5.6.2 Education about Disaster Risk 248
5.6.3 Coordination 251
5.6.4 Specialist Staff 253
5.6.5 Planning Process 253
5.6.6 Financial Resources 256
5.6.7 Law Activation 256
5.6.8 Employees' Rights 256
5.6.9 Attention for Obligations 257
5.6.10 Decision-Making 257
5.6.11 Risk Assessment 259
5.7 Summary of the Recommendations 259
5.8 Validation 260

5.8.1 Refinement of the Recommendations 261
5.9 Final Recommendations 261
5.9.1 Endowment of Equipment, Tools, and Infrastructure 261
5.9.2 Education about Disaster Risk 262
5.9.3 Coordination 263
5.9.4 Planning Process 263
5.9.5 Specialist Staff 264
5.9.6 Employees' Rights 264
5.9.7 Financial Resources 265
5.9.8 Attention for Obligations 265
5.9.9 Decision-Making 265
5.9.10 Law Activation 266
5.9.11 Risk Assessment 266
5.10 Chapter Summary 268
CHAPTER 6 CONCLUSION 270
6.1 Introduction 270
6.2 Synthesis on the Objectives of the Study 270
6.3 Objective 1: Critically Review the Significance and the Challenges of Disaster Management in General and the Disaster Response Management Stage in Particular. 270
6.4 Objective 2: Evaluate and Synthesise the Current Status of Disaster Response Management Stemming from Terrorism in Iraq. 272
6.5 Objective 3: Critically Evaluate the Weaknesses in the Disaster Response Management Stage with Particular Reference to Iraq. 273
6.6 Objective 4: Critically Evaluate the Strengths in the Disaster Response Management Stage with Particular Reference to Iraq 275
6.7 Objective 5: Make Recommendations to Improve the Effectiveness of Disaster Response Management Stemming From Terrorism in Iraq 275
6.8 Contribution to Theory 276
6.9 Contribution to Practice 277
6.10 Limitations of the Study 278
6.11 Further Research 280
6.12 Summary of Contribution to Knowledge 281
APPENDICES 282
APPENDIX A LIST OF PUBLICATIONS 282
APPENDIX B ELEMENT OF GOOD PRACTICE DISASTER RESPONSE MANAGEMENT 284

APPENDIX C ELEMENT OF GOOD PRACTICE DISASTER RESPONSE MANAGEMENT CATEGORISED BY MANAGEMENT STAGES 288
APPENDIX D ETHICAL APPROVAL 293
APPENDIX E QUESTIONNAIRE 294
APPENDIX F INTERVIEW GUIDELINE 302
APPENDIX G ACCESS DATA PERMISSION 304
APPENDIX H INCLUDING NAME PERMISSION 305
APPENDIX I RELEVANT DOCUMENT 306
I.1 Study Conclusion 306
I.2 Analysis of the Reality of Disaster Management in Iraq 306
I.3 Hyogo Framework for Action 2013 – 2015 (HFA) 310
I.4 Main Themes of the Arab Strategy for Disaster Risk Reduction 2020 (Wehbe, 2013) 312
APPENDIX J THE ORGANISATIONAL STRUCTURE OF THE GENERAL DIRECTORATE OF CIVIL DEFENCE 2009 315
APPENDIX K INVITATION LETTER 316
APPENDIX L VALIDITY INTERVIEW GUIDELINES 317
REFERENCES 324

LIST OF FIGURES

Figure 1.1 Total number of technological disasters reported in the world between 1900 and 2012 (Coppola, 2015, p. 32). Source: EM-DAT – International Disaster Database. 2
Figure 1.2 Number of Suicide Attacks in Iraq by Quarter, 2003–2006 (Hafez, 2006, p. 601) .6
Figure 1.3 Number of Persons Killed and Injured in Suicide Attacks by Quater, 2003–2006 (Hafez, 2006, p. 606) 6
Figure 2.1 Frequency of Disasters Each Decade (Aitken & Leggat, 2012, p. 146) 15
Figure 2.2 Number of Catastrophic Events, 1970–2015 (Bevere et al., 2016, p. 2).....16
Figure 2.3 Types of disasters (Biswas & Choudhuri, 2012, p. 13).....17
Figure 2.4 Types of disasters (Shaluf, 2007, p. 705) 17
Figure 2.5 Types of Human-Made Disasters (Shaluf, 2007, p. 705) 19
Figure 2.6 Type of Human-made Disasters Highlighted in this Research 22
Figure 2.7 Disaster Cycle (Gospodinov & Burnham, 2008, p. 28) 26
Figure 2.8 Disaster Management Cycle (Vasilescu, Khan, & Khan, 2008, p. 49) 27
Figure 2.9 Response Stage Highlighted in this Research 28
Figure 2.10 The Four Stages of Disaster Response Management 35
Figure 2.11 Four Functions of Management (Jones & George, 2003, p. 8) 36
Figure 2.12 The Control Process (Dixon, 2003, p. 141).....42
Figure 2.13 Close Relationship of Planning and Controlling (Weihrich & Koontz, 2005, p. 98) 42
Figure 2.14 Summary of the Challenges during Disaster Response Management stage.....62
Figure 2.15 Number of Overall Incidents in Iraq Caused by Terrorists, 2009-2016 (Statistic Department, 2016) 68
Figure 2.16 Types of Terrorist Operation, 2009-2016 (Statistic Department, 2016) 69
Figure 2.17 Number of Killed and Injured in Terrorist Operations, 2004-2016 (Planning and Resource Development Department, 2004-2016).....70
Figure 2.18 Number of Males, Females, and Children Killed in Terrorist Operations, 2004-2016 (Planning and Resource Development Department, 2004-2016) 71
Figure 2.19 Number of Males, Females, and Children Injured in Terrorist Operations, 2004-2016 (Planning and Resource Development Department, 2004-2016) 72
Figure 2.20 Iraq and Countries Surrounding Iraq Highlighted in this Paragraph.....77
Figure 3.1. Nested Research Methodology Approach (Sources: Adapted from Kagioglou et al. (1998)).....79

Figure 3.2 Saunders' Research Onion Model (Saunders et al., 2016, p. 164) 79
Figure 3.3 The Philosophical Stance Pertaining to the Study 81
Figure 3.4 Research Strategies within the Philosophical Continuum - Adapted from (Sexton, 2007) 83
Figure 3.5 Research Choices (Saunders et al., 2016, p. 152) 88
Figure 3.6 Sampling methods (adapted from Saunders et al. (2016)) 94
Figure 3.7 Radar Chart for Every Data Set to indicate Both Importance and Implementation's Value 99
Figure 3.8 Example of Data Presentation Using Nvivo 10 101
Figure 3.9 Methodology for this Research Adopted from Saunders' Research Onion 102
Figure 3.10 Research Methodological Framework 105
Figure 4.1 Nodes for Planning Weaknesses 110
Figure 4.2 Simi-Generic Generator 122
Figure 4.3 Weaknesses during the Planning Stage 123
Figure 4.4 Nodes for Planning Strengths 124
Figure 4.5 Strengths during the Planning Stage 128
Figure 4.6 Nodes for Planning Recommendations 129
Figure 4.7 Recommendations for the Planning Stage 134
Figure 4.8 Nodes for Organising Weaknesses 135
Figure 4.9 Weaknesses during the Organising Stage 144
Figure 4.10 Nodes for Organising Strengths 145
Figure 4.11 Strengths during the Organising Stage 147
Figure 4.12 Nodes for Organising Recommendations 147
Figure 4.13 Recommendations for the Organising Stage 151
Figure 4.14 Nodes for Directing Weaknesses 152
Figure 4.15 Weaknesses during the Directing Stage 161
Figure 4.16 Nodes for Directing Strengths 162
Figure 4.17 Strengths during the Directing Stage 165
Figure 4.18 Nodes for Directing Recommendations 166
Figure 4.19 Recommendations for the Directing Stage 169
Figure 4.20 Nodes for Controlling Weaknesses 170
Figure 4.21 Weaknesses during the Controlling Stage 174
Figure 4.22 Nodes for Controlling Strengths 175

Figure 4.23 Strengths during the Controlling Stage 177
Figure 4.24 Nodes for Controlling Recommendations 178
Figure 4.25 Recommendations for the Controlling Stage 181
Figure 4.26 Comparison of the Importance of Planning Process Factors against their Implementation at the Planning Stage 184
Figure 4.27 Comparison of the Importance of Financial Resources Factors against their Implementation at the Planning Stage 185
Figure 4.28 Comparison of the Importance of Supporting Ordinances Factors against their Implementation at the Planning Stage 185
Figure 4.29 Comparison of the Importance of Education about Disaster Risk Factors against their Implementation at the Planning Stage 186
Figure 4.30 Comparison of the Importance of Coordination Problems Factors against their Implementation at the Organising Stage 187
Figure 4.31 Comparison of the Importance of Problem of Interplay Factors against their Implementation at the Organising Stage 188
Figure 4.32 Comparison of the Importance of Hierarchy and Centralization Problems Factors against their Implementation at the Organising Stage 189
Figure 4.33 Comparison of the Importance of Command Centre Factors against their Implementation at the Directing Stage 190
Figure 4.34 Comparison of the Importance of Communication Factors against their Implementation at the Directing Stage 191
Figure 4.35 Comparison of the Importance of Providing the Right Relief Supplies Factors against their Implementation at the Directing Stage 192
Figure 4.36 Comparison of the Importance of Speed of Response Factors against their Implementation at the Directing Stage 193
Figure 4.37 Comparison of the Importance of Evaluations Factors against their Implementation at the Controlling Stage 194
Figure 4.38 Number of Killed in the General Directorate of Civil Defence in Baghdad and the Provinces, while Responding to Disaster 2003–2015 (General Directorate of Civil Defence, 2016) 197
Figure 4.39 Percentage of Staff Shortage in the Directorates of Civil Defence in Baghdad and the Iraqi Provinces (General Directorate of Civil Defence, 2016) 198

Figure 4.40 Number of Unfit to Work (Medically Classified) Classifications (a, b, c, unfit) 199
Figure 4.41 Number of Unfit to Work (Medically Classified) as (a, b, c, unfit) by Directorate 200
Figure 5.1 Plan of Civil Defence Centres Locations with Reference to Road Network in Baghdad Governorate (Urban Planning Department, 2014, p. 36).....225
Figure 5.2 Classification of Study Recommendations into PEST Factors 267

LIST OF TABLES

Table 1.1 Top 10 Countries Ranked by Terrorism Risk, 2010 (Coppola, 2011, p. 118).....5
Table 2.1 Types of Disasters (Shaluf, 2007).....21
Table 2.2 Element of Good Practice Disaster Response Management Categorised by Management Stages 63
Table 2.3 Natural and Human Induced Vulnerabilities Faced by Iraq (Humayun & Al-Abyadh, N.D., p. 9) 67
Table 3.1 Values Designated for the Likert Scale 91
Table 3.2 Minimum Size for Non-Probability Sample (Saunders et al., 2016, p. 297).....95
Table 3.3 Objective of the Study and Method of Investigation.....97
Table 4.1 Documents Details.....195
Table 4.2 The Current and Required Number of Civil Defence Centres per 100,000 People in the Province of Baghdad (Urban Planning Department, 2014) 201
Table 4.3 The Number and Status of the Fire Nozzles in the Province of Baghdad in 2014 (Urban Planning Department, 2014).....202
Table 5.1 Weaknesses during Disaster Response Management Stages.....204
Table 5.2 Strengths during Disaster Response Management Stages 238
Table 5.3 Recommendations for Disaster Response Management Stages 246
Table I.0.1 The Most Important Risk-Prone Provinces in Iraq, Types of Risks and Population Exposure to Risks (Committee 101, 2010, pp. 7-8).....308

ACKNOWLEDGEMENTS

I would like to thank the following people and organisations for supporting me in numerous ways throughout my PhD. My first sincere appreciation is addressed to Dr Udayangani Kulatunga, who supervised me for the entire journey of my PhD. Her continuous support, encouragement and guidance helped me to stand on my own feet and climb through the ups and downs of my PhD journey. My journey would never have been this far without her wise advice. I would also like to extend my gratitude to my co-supervisor, Dr. Menaha Thayaparan, who has been supporting me throughout my research period.

I would also like to thank the Iraqi Ministry of Higher Education, for providing me with the scholarship, and special thanks to the interviewees and questionnaire survey respondents in the Iraqi General Directorate of Civil Defence, for spending their valuable time and providing invaluable information.

My special thanks to all my colleagues in room 346 of Maxwell building, who have been very supportive and inspiring to me throughout my whole PhD journey at the University of Salford. I wish to express my appreciation to Mrs Maggie Hardman who offered invaluable assistance in the preparation of this thesis. My gratitude is also forwarded to my friends Abdelsameea and Hussein for their support, they have been like brothers to me, since starting my PhD journey. Further, Shaymaa, Rasha, Ruqaya, and Ola are also thanked for their close friendship and support.

My gratitude goes to my late parents, who have been the main reason and inspiration for me to take this PhD journey in the first place. My father's never-ending love has been supporting me in each and every step I take. I am sure he would be proud of my work. To my late mother for her continuous support and the strength she has given to me throughout my entire life. Special thanks to my sister and friend Amera Al-Dahash for her constant help and sacrificing her valuable time on compiling the PhD thesis. Without her support, I would have never completed the PhD as planned. Having them beside me has added enormous strength to my life. My gratitude is also forwarded to my sisters, Thaera, Soroor, and Adaweia, my brothers, Adnan and Ammar. My greatest love and thanks goes to my daughter Hawraa for bringing so much happiness and strength to my life. You have been my spirit, inspiration, and motivation to finish this work.

DEDICATION

I dedicate this piece of research to my dearest late father, my late mother, my brothers and sisters, and my lovely girl Hawraa.

DECLARATION

This thesis is submitted under the University of Salford rules and regulations for the award of a PhD degree by research. While the research was in progress, some research findings were published in refereed journals and conference papers prior to this submission (refer to Appendix A).

The researcher declares that no portion of the work referred to in this thesis has been submitted in support of an application for another degree of qualification of this, or any other university or institution of learning.

Hajer AL-Dahash

ABBREVIATIONS

CBDM	Community-Based Disaster Management
CCC	Crisis Command Centre
DHS	Department of Homeland Security
DPRCM	Disaster Prevention and Response Committees
DPROPs	Disaster Prevention and Response Operational Plans
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EM-DAT	The International Disasters Database
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GoI	Government of Iraq
GPS	Global Positioning System
ICRC	International Committee of the Red Cross
ICT	Information and communications technology
IGDCD	Iraqi General Director of Civil Defence
NGOs	Non-Governmental Organisations
SAR	Search and Rescue
UXO	Unexploded Ordnance

ABSTRACT

Since 2003, Iraq has been experiencing an unprecedented series of disasters; both human made and natural, and this has given rise to increased attention by policymakers to the country's arrangements for disaster management. Disaster response, which refers to actions “taken immediately before, during, or directly after an emergency occurs, to save lives [and] minimise damage to property” is one of the critical phases in the Disaster Management life cycle. The focus of this study is on disaster response management associated with the events caused by terrorism activities in Iraq.

The study analyses and evaluates the basic functions of disaster management operations (planning, organising, directing, controlling); these are presented as weaknesses, strengths and recommendations, which are identified for effective disaster response management. This research adopts a single holistic case study approach, where the Iraqi General Directorate of Civil Defence is the case study and disaster response management is the unit of analysis. The Iraqi General Directorate of Civil Defence is considered as the critical case for this study as they are the main administrative body responsible for responding to disasters stemming from terrorism in Iraq. A mixed methods approach is used to improve the validity and reliability of the research. As such, the findings are based on semi-structured interviews and questionnaire surveys with executives responsible for disaster response in the Iraqi General Directorate of Civil Defence. In addition, a documentary review of all major documents related to disaster response management in this directorate is undertaken. Conceptual content analysis is used to articulate the primary data and this is then analysed in the context of the secondary data, by conducting cross analysis between the four different stages of disaster response management.

The findings show that disaster response management is a significantly important stage in the disaster management cycle, as an efficient and effective response will ultimately minimise the loss of life and damage to property. Whilst there are some weaknesses and limited implementation of several elements of good practice in disaster response management in the current disaster response practices, there are some strengths which should be built upon. The final recommendations are made up of eleven sets of different themes, based on findings from both the secondary and primary data.

This study contributes to the scarce literature currently published on the subject of disaster response management in developing countries, such as Iraq. The uniqueness of such studies

could be attributed to the very limited attempts that have been made in the past to explore disaster response management, possibly due to the difficulty in collecting data around terrorism activities. The practical contribution of this study is the potential improvement of the current disaster response practices and the systems of disaster response management, which will ultimately minimise the loss of life and damage to property. The recommendations proposed in this study could potentially improve the immediate response system to serve Iraq's disaster management in the future.

CHAPTER 1 INTRODUCTION

1.1 Research Background

Disasters are as old as human history but the dramatic increase and the damage caused by them in the recent past have become a cause of national and international concern (Dey & Singh, 2006). 'Disasters' have become a common word to people all over the world. The whole world is prone to natural disasters as well as to abrupt human-made ones, which have been occurring repeatedly in recent history (Palliyaguru, Amaratunga, & Haigh, 2013).

Lynn (2016) define disaster as a "natural or human-made hazard resulting in significant physical damage or destruction, loss of life, or drastic change to the environment". A disaster is classified as such and noted on the EM-DAT database when at least one of the following criteria are present (Guha-Sapir, Hoyois, & Below, 2016)

- 10 or more people are reported killed;
- 100 or more people are reported affected;
- There is a declaration of a state of emergency;
- There is a call for international assistance.

The occurrence of a major disaster threatens the possible breakdown of the interconnected sociotechnical system that provides technical, economic, social, and cultural services to a particular area or community. The disaster menaces not only the destruction of technical infrastructures such as power lines, communication lines, and roads but also the organisational, social, and economic structures that support the daily actions of the community (Comfort, Ko, & Zagorecki, 2004). Disasters sometimes occur without any warning, particularly natural disasters. Human-made disasters can be caused by technological and industrial developments; with political and socioeconomic change or stagnation come dissatisfaction, terrorism, and war (Desforges & Waeckerle, 1991). Disasters are often large intractable problems that test the ability of communities and nations to effectively protect their populations and infrastructure, to reduce both human and property loss, and to rapidly recover (Altay & Green III, 2006). Thus, Desforges & Waeckerle (1991), at that time, argued that natural and human-made disasters, such as earthquakes, floods, plane crashes, high-rise building collapses, or major nuclear facility malfunctions, posed increasing challenges to disaster management response. Statistics

indicated, in the first decade of the 21st century, that the number of natural and human-made disasters had climbed inexorably, since from 1994 to 1998, the reported disasters average was 428 per year but from 1999 to 2003, this increased to an average of 707 disaster events per year; an increase of about 60 percent over the previous years. The biggest rise was in countries of low human development, which suffered an increase of 142 percent (Dey & Singh, 2006).

Even in the 1990s, it was recognised that disasters, especially human-made ones, were an ever-present threat and were happening at an increasing rate worldwide (Desforges & Waeckerle, 1991). Over the course of the past century, according to Coppola (2015), human-made disasters grew at a rate much greater than natural disasters. Aitken and Leggat (2012) and Bevere, Sharan, and K S (2016) agree with this view presenting the significant rise in human-made disaster compared to natural disaster, as explained in Section 2.3 Figure 1.1 also shows a rise in human-made disaster numbers.

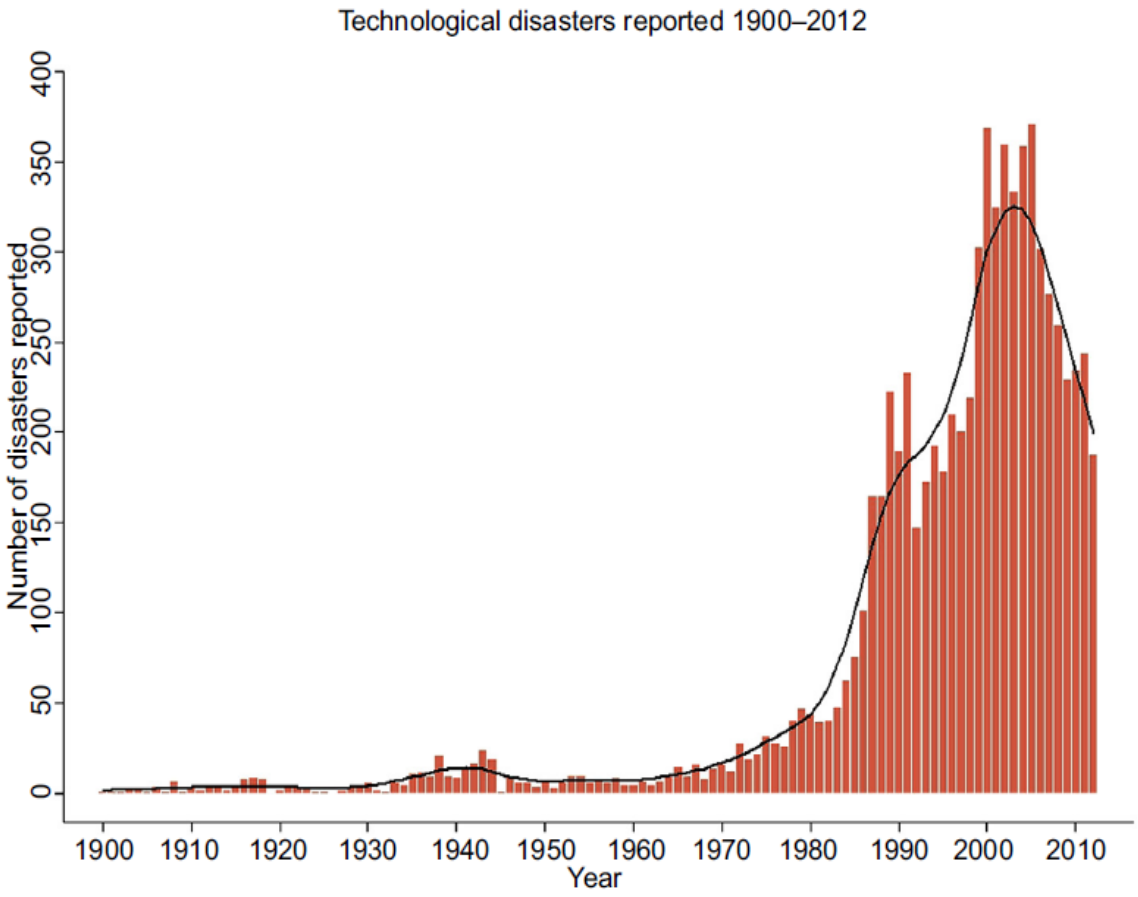


Figure 1.1 Total number of technological disasters reported in the world between 1900 and 2012 (Coppola, 2015, p. 32). Source: EM-DAT – International Disaster Database.

It can be seen in Figure 1.1, that the average number of reported technological disasters occurring worldwide grew significantly between 1900 and 2012, spiking from around the start of the 1990s and peaking at the start of the new century. The number was less than 50 per year in 1980 and this grew to almost 350 per year in 2000, representing a more than sevenfold increase in just 20 years (Coppola, 2015).

The post-cold war era brought many changes in international relations, some new allies were formed and organisations such as the UN have attempted to help with the challenges to the global community, an effort which remains in 2017. One of the main challenges has been the response to both natural and human-made disasters in situations of armed conflict. At the end of the 20th century, there were more than 35 armed conflicts worldwide that inflicted over 1,000 civilian or military deaths (Jenson, 1997). Since then, the number of disasters has increased dramatically, as shown in Figure 1.1.

In addition to this, there have been various terrorist attacks that have occurred throughout the world, causing destruction to lives and property. Different countries have faced major attacks, such as Germany, Russia, Spain, Iraq, the United Kingdom, Kenya, and Afghanistan. Suicide bombings, for instance, are becoming even more common in the Middle East (McEntire, 2015).

According to Paffenholz (2005), two-thirds of the countries of the world are either suffering from political tensions and violent conflict or find themselves in the aftermath of a destructive conflict or war. Wisner, Blaikie, Cannon, and Davis (2004) agree with this view and added that a much greater proportion of the world's population find their lives shortened by events that often go without being noticed: violent conflict, illnesses, and hunger. Such events have often been passed as normal existence in many parts of the world, especially (but not only) in developing countries. Not only the lives of people are at stake, based on Bush and Duggan (2015) the domestic knowledge infrastructure of societies can be frequently targeted directly and indirectly if conflicts multiply, interact and escalate. Therefore, damage resulting from armed conflict, depending on the nature of the weapons used and the possibilities of secondary damage linked to the conflict (for example, fires or floods) may resemble the impact of natural disasters (Teijgeler, 2006).

As a result, timely interaction and coordination of disaster management services are required by disaster response and recovery efforts in order to save lives and property (Meissner, Luckenbach, Risse, Kirste, & Kirchner, 2002).

1.2 Research Problem

The concept of disaster management has been identified by the research community as: "the body of policy and administrative decisions, the operational activities, the actors and technologies that pertain to the various stages of a disaster at all levels" (Lettieri, Masella, & Radaelli, 2009, p. 117). It is widely acknowledged that disaster management is a very complex, difficult, and dangerous activity (Madry, 2015). Accordingly, disaster management aim to be proactive (Handmer & Parker, 1991). To conduct proper disaster management, the sequence of activities that are logical, integrated and progressive should be acted as a cycle called Disaster Management Cycle (Iyer & Mastorakis, 2006, p. 3). There are different phases of this cycle, such as response, reconstruction, mitigation, and preparedness (Gospodinov & Burnham, 2008, p. 28). Different scholars use the same concepts for these phases but in different terms. Although appropriate actions at all stages of the disaster management cycle lead to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters (Vasilescu et al., 2008), the response phase is considered as one of the critical phases of the Disaster Management life cycle (Baharin, Shibghatullah, & Othman, 2009; Hale, Dulek, & Hale, 2005). The complexity of the disaster response mission, in some cases, will be increased due to the high volume of potential casualties as well as the urgency of a fast response (Muaafa, Concho, & Ramirez-Marquez, 2014). It is widely acknowledged that in the world of disaster response, minutes of delay can cost lives and loss of property, so effectiveness and efficiency are essential. In order to avoid actions that are impulsive and possibly counterproductive, the speed of response should be balanced with intelligent assessment and good planning (Lindell, Prater, Perry, & Nicholson, 2006). Moreover, according to Madry (2015), the disaster response process has made progress in incorporating space and other advanced technologies, but there is still much work that needs to be done. Many disaster incidents still do not effectively incorporate these powerful capabilities, particularly in less developed parts of the world. Such a problem is due to the nature of the professional disaster management and response community. In agreement, Uhr, Johansson, and Fredholm (2008) argue that to improve the analysis of a response system and its data collection process, future research in this area is needed to further advance understanding of this phenomena. Not only that, this need is required to develop greater precision and better routines in the process of analysis and mapping of data to better understand the reality of disaster response. Such understanding enables normative strategies in disaster response to be adequately developed. Further, to obtain a better understanding of the capabilities of a disaster response system, greater insight into the dynamic processes involved when such a system responds is required (Uhr et al., 2008).

According to Haigh and Amaratunga (2010) disasters of human origin affected many people in the first decade of this century. Wars often resulted from the conflict in regions, for example, in Somalia, Afghanistan and Darfur. Losses from such wars exceeded the losses from "natural" disaster. Moreover, conflict causes disasters related to terrorist actions such as those in New York and Washington (2001), Madrid (2004), Bali (2005), London (2005) and Sri Lanka. Consequently, Haigh and Amaratunga (2010) emphasised that military conflict or actions carried out by terrorists should be placed within the context of wide-ranging disaster planning. There has been some discussion among researchers regarding the behavioural response to the disaster as applicable to large-scale destruction and acts of terrorism (Fischer, 1998, 2005, 2008; Furedi, 2007). It is widely believed that the world changed forever after the events of 11 September 2001. It became a more dangerous and uncertain place, where no-one is safe or immune from the threat of terror. Terrorism is the most salient hazard due to a remarkable upsurge in terrorist acts in the recent past (Coppola, 2015; Fischer, 1998, 2005, 2008). Continuing terrorist attacks worldwide are likely to sustain attention to disaster planning, especially in Middle Eastern countries (Perry & Lindell, 2003).

With regard to Iraq, the situation is not an exception, as shown in Table 1.1. Iraq was ranked number 1, out of the top 10 countries most at risk of terrorism (due to their vulnerability to global risks). It is generally believed that Iraq contains many terrorists and terrorist organisations (Fischer, 2005).

Table 1.1 Top 10 Countries Ranked by Terrorism Risk, 2010 (Coppola, 2011, p. 118)

Rank	**Country**
1	Iraq
2	Afghanistan
3	Pakistan
4	Somalia
5	Lebanon
6	India
7	Algeria
8	Colombia
9	Thailand
10	Philippines

Violence in Iraq has also become normalised, ranging from the Iraqi and US military assaults and sectarian militias, the threat of suicide bombings, to violent street crime (Wong, al-Saiedi, & Silva, 2005). According to Hafez (2006), shown in Figure 1.2, 443 suicide attacks took place in Iraq between 22 March 2003 to 20 February 2006.

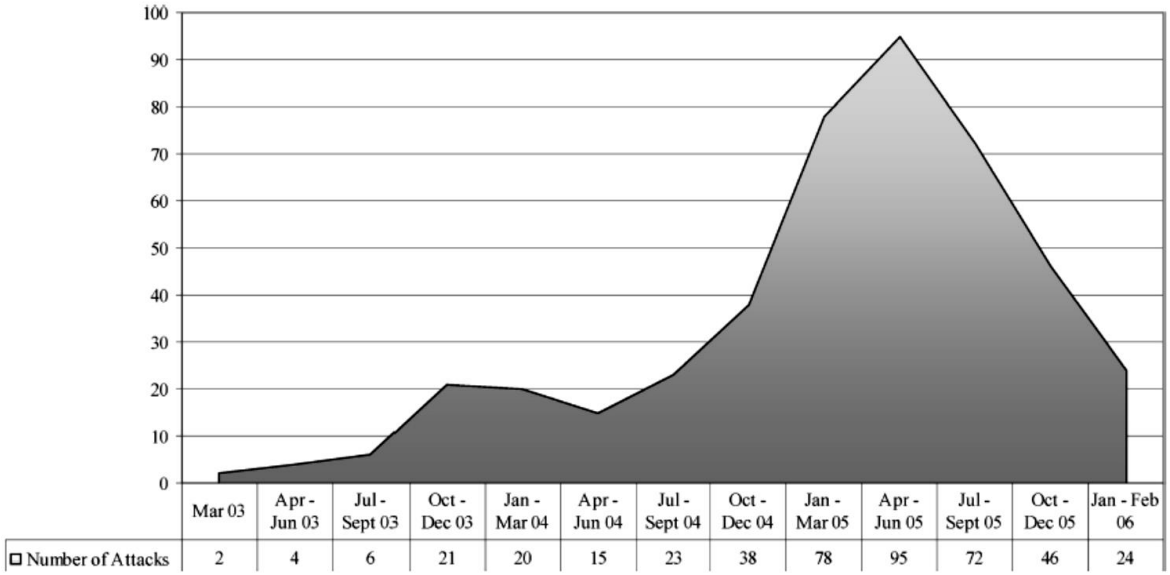


Figure 1.2 Number of Suicide Attacks in Iraq by Quarter, 2003–2006 (Hafez, 2006, p. 601)

Moreover, due to the development of insurgency after the U.S.-led invasion in March 2003, the lethality of suicide attacks increased, as shown in Figure 1.3.

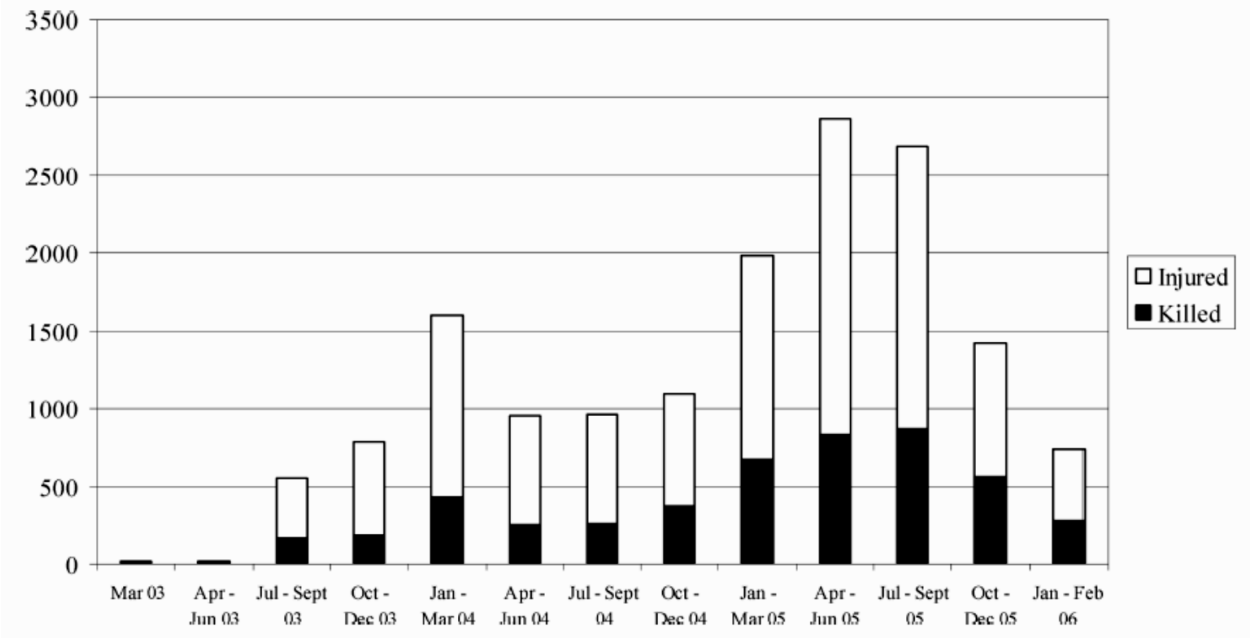


Figure 1.3 Number of Persons Killed and Injured in Suicide Attacks by Quater, 2003–2006 (Hafez, 2006, p. 606)

As Humayun and Al-Abyadh (2014) emphasise, multiple gaps and serious shortcomings have been revealed in the disaster risk reduction relating legal and institutional arrangements in Iraq. At governorate tier, the disaster management is traditionally operated based upon their conventional experience. Moreover, the institutional setups, as well as the laws, are poorly equipped to respond to diverse types of disasters.

War and post-war conflicts have crippled many essential services needed to reduce risks, manage hazards and respond to disasters (Humayun & Al-Abyadh, 2014). Due to a lower frequency of disasters associated with natural hazards in recent years, there has been no rigorous effort to institute a comprehensive multi-risk disaster risk management framework. The transition from war and internal conflict to functional governance has a direct bearing on the DRR architecture in Iraq. Further, there is no coordinating body or focal agency to ensure an integrated response by the multiple agencies working on Disaster Risk Reduction in Iraq (Humayun & Al-Abyadh, 2014).

It further emphasises that the lack of standards and criteria for assessing cases of disasters is considered one of the most significant weaknesses in Iraq's existing disaster legislation. In particular, existing legal and institutional systems are ill-equipped to assess and respond to multi-hazard risks (Humayun & Al-Abyadh, 2014, N.D.).

Goodyear (2009) shows that comprehensive and coordinated disaster management is lacking in Iraq which includes a risk analysis based on an examination of hazards, vulnerabilities, capacities of populations local community, and the first responders charged to assist in times of emergencies. Further, with an extensive list of human-made hazards to address, Iraq is ill equipped at this time to encounter all these challenges without external support. As a result, the need for stronger infrastructural and technical capabilities within the Government of Iraq and other disaster risk reduction stakeholders is an imperative to plan for effectively respond to future disasters in Iraq.

Historically, in Iraq, the response to the disasters have largely remained ad-hoc and reactive in nature (Humayun & Al-Abyadh, 2014). As humanitarian crises become more complex, with new and varied actors on the ground, strong partnerships and collaboration between experts, organisations, and disciplines are necessary to build capacity especially for the disaster response stage in Iraq.

There is a dearth of literature on the particular topic of disaster response management in Iraq. Indeed, Ren, Kiesler, and Fussell (2008) said that little is known about the challenges and obstacles when it comes to sharing and coordinating information effectively, and the lack of understanding can be attributed to sparse empirical studies in this area. This is compounded when researching the country of Iraq. This is supported by Oloruntoba (2005) and Steigenberger (2016), who argued that there is a focus on developed countries, while disasters that occur in developing countries have received scarce coverage.

In addition, while previous studies often involve a post-disaster evaluation, few have examined what is happening during the disaster response. Another gap in the literature is that the topic has usually been investigated from a single stakeholder's perspective (Ren et al., 2008) rather than looking at multiple stakeholders.

This study will attempt to gather a wealth of information about Iraq which does not receive adequate coverage in the disaster literature. This will provide useful insight into the role of disaster response management in Iraq.

1.3 Aim, Objectives and Research Questions

1.3.1 Aim

This study aims to evaluate and make recommendations to disaster response management in Iraq with particular reference to terrorism to enhance the current disaster response practices. This exploration focuses on the achievement of the basic functions of the management operation (planning, organising, directing, controlling).

1.3.2 Objectives

In order to achieve the aforementioned aim, the following objectives have been defined:

1) To critically review the significance and the challenges of disaster management in general and the disaster response management stage in particular.
2) To evaluate and synthesise the current status of disaster response management stemming from terrorism in Iraq.
3) To critically evaluate the weaknesses in the disaster response management stage with particular reference to Iraq.

4) To critically evaluate the strengths in the disaster response management stage with particular reference to Iraq.
5) To make recommendations to improve the effectiveness of disaster response management stemming from terrorism in Iraq.

1.3.3 Research Questions

The following research questions were formulated:

1) What is the status of disaster response management in Iraq?
2) Why is the response phase considered as one of the critical phases of the Disaster Management life cycle?
3) What are the weaknesses during disaster response management in Iraq?
4) What are the good practices to critically evaluate the disaster response management stage?
5) Why is the evaluation of disaster response management critical to future response improvements?

1.4 Scope of the Study

This study is scoped to include Disaster Response Management of human-made disasters, such as terrorism activities, which occur in Iraq. The General Directorate of Civil Defence is a main administrative body that is responsible for the disaster response activity in Iraq. As such, this research focuses on the General Directorate of Civil Defence to investigate the current disaster response practices.

1.5 Research Methodology

Based on the nature of the research objectives and research questions, this research is philosophically placed more towards subjectivism and interpretivism because the research deals with issues that are more subjective in nature, rather than objective. Further, from the understanding of axiology, the position of this research is closer to the value-laden stance (see Section 3.3 in Chapter 3). This research adopts case study as the research approach (see Section 3.5 for justifications). A single holistic case study design is taken with the unit of analysis being disaster response management (see Section 3.5.1.2). In addition, the General Directorate of Civil Defence was identified in the scope of the study because it is the main administrative body

that is responsible for disaster response activity in Iraq. Therefore, primary data was collected from experts who are involved in disaster response in the General Directorate of Civil Defence. To gather expert opinions regarding the phenomenon under consideration, semi-structured interviews and a questionnaire survey were used in this study in addition to documents that were reviewed as a supplement to the aforementioned data collection techniques.

For the analysis of the semi-structured interviews and document analysis, content analysis was used, whilst for the analysis of the questionnaire survey, descriptive statistics were used. By using the computer aided software programmes NVivo (version 10) and MS Excel, the data analysis process was supported. To increase the acceptability of the findings and to make the study more robust, the findings were corroborated by triangulating the sources of data. The primary and secondary data findings were validated by conducting expert interviews, in order to increase the robustness of the final sets of recommendations.

1.6 Contribution to Knowledge

Though several studies have been conducted on disaster management, there is a focus on developed countries, while very limited attempts have been made to explore disaster management in developing countries. Further, due to the fact that Iraq and the Middle Eastern region of the world do not receive adequate coverage in the disaster literature, this study has an important contribution to the literature in terms of its primary and secondary data which do not likely exist anywhere else in the world. Moreover, there is a dearth of research on the impact the current disaster response status in Iraq has in addressing the problems in disaster response management in Iraq, as very little empirical data is available in this field. This study will provide useful insight into the role of disaster response management in Iraq.

The original contribution to knowledge, therefore, is the identification of the challenges and obstacles facing disaster response management throughout the world in general and facing disaster response management during terrorist operations in Iraq in particular.

The identification of the good practice disaster response management factors, which help to identify the overall gaps during disaster response management in Iraq also contributes to knowledge. Furthermore, weaknesses and strengths of the current disaster response practices are identified, in order to make recommendations to improve the immediate response process in its four stages (Planning, Organising, Directing, and Controlling) which will ultimately

minimise the loss of life and damage to property, and will raise awareness and possibly address these weaknesses and enhance disaster response practices. The proposed recommendations, therefore, contribute to the sparse literature based in Iraq, thereby further enriching the knowledge of disaster response management in general.

To conclude, this study contributes to both the knowledge and the practices as follows:

1) Drawing up the challenges facing disaster response management throughout the world in general, and those facing the Iraqi General Directorate of Civil Defence in particular.
2) Identifying the factors of good practice in disaster response management.
3) Identifying the overall gaps during disaster response management in Iraq.
4) Identifying points of weakness and strengths in the current disaster response practices in Iraq.
5) Proposing sets of recommendations for the Iraqi General Directorate of Civil Defence.

1.7 Organisation of the Thesis

The chapters of the thesis are organised as follows:

1.7.1 Chapter 1: Introduction

An overall view of the thesis was provided in Chapter 1 by presenting the key issues which led to the initiation of this study, its aims and objectives, a brief introduction to the research methodology and contribution to knowledge.

1.7.2 Chapter 2: Literature Review

Chapter 2 presents the literature review. From the literature, key issues were identified related to the disaster, disaster management, disaster response management, and the challenges faced in the response management stage. In addition to that, specific literature related to disaster response management in Iraq and countries surrounding Iraq is presented and synthesised.

1.7.3 Chapter 3: Research Methodology

The research methodological design is provided in Chapter 3 in addition to the research process that was followed during the study. The chapter delivers the details of the research philosophy, approach and data collection and analysing techniques used for the study.

1.7.4 Chapter 4: Data Analysis and Interpretation of Results

Chapter 4 shows the description and analysis of the single case study. To provide a general idea about the General Directorate of Civil Defence, the case study background is provided. Further, the analysis of the semi-structured interview transcripts is presented by categorising each stage as being either a weakness, strength, or recommendation for disaster response management. Subsequently, the implementation of good practice disaster response management factors is checked by conducting a questionnaire survey. The gaps between levels of importance and implementation are presented. The final section in this chapter examines different kinds of documents, such as unpublished internal statistics, reports and studies, and different laws related to the current disaster response management and response practices within the Iraqi General Directorate of Civil Defence.

1.7.5 Chapter 5: Research Findings

Chapter 5 presents and discusses the key research findings of the single case study based on the disaster response expert interviews, questionnaire survey, document analysis, and literature review. It also presents the final sets of recommendations, after a validation process, suggested to enhance the overall process to effectively respond to a disaster.

1.7.6 Chapter 6: Conclusion

Chapter 6 draws up conclusions by linking the objectives of the study with the overall research findings from the primary and secondary data. Moreover, theoretical and practical implications are also provided followed by the limitations of the study and future research areas.

1.8 Chapter Summary

This chapter provided the overall view on the subject area under consideration in this thesis in terms of its background, problem, aim, objectives, a summary of the research methodology, contribution to knowledge, and the structure of the thesis. The next chapter reviews and synthesises the literature review of this study.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter is important with respect to this research as it provides the initial information for disaster management in general and disaster response management in particular, to further advance the understanding of this phenomenon. To understand the concept of disaster, especially human-made disaster and its management, it is necessary to review the existing literature in several domains as listed below:

- The first domain will explain the definition of disaster.
- The second domain of this section will focus on types of disasters.
- The third domain will include the explanation of terrorism in Iraq.
- The fourth domain will describe the disaster management cycle in general and the disaster response management phase in particular.
- The fifth domain will present the four stages of disaster response management (Planning, Organising, Directing, and Controlling).
- The sixth domain will illustrate the challenges during the four stages of disaster response management.
- Finally, in the seventh domain, disaster and disaster management in Iraq and countries surrounding Iraq will be investigated.

2.2 Defining Disaster

In order to better understand the concept of disaster, it is first important to provide a definition of the term disaster. Many researchers have defined disaster in their research. Madry (2015) defined disaster as an "emergency that cannot be effectively managed using existing, local resources and implies a broad-scale incident that covers many people and affected infrastructure. Anytime a community is overwhelmed by an incident, and it cannot effectively manage the situation using its existing resources, requiring a call for outside assistance, that is considered to be a disaster". While one of the famous researchers in the field of disasters, Fischer (2008, pp. 2-3) identifies the concept of disaster as "actual or threatened accidental or uncontrollable events that are concentrated in time and space, in which a society or a relatively self-sufficient subdivision of a society undergoes severe danger, and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfilment of

all or some of the essential functions of the society, or its subdivision, is prevented". In a similar way, Lindell (2013, p. 797) states that a disaster is "an event concentrated in time and space, in which a society or one of its subdivisions undergoes physical harm and social disruption, such that all or some essential functions of the society or subdivision are impaired". Gospodinov and Burnham (2008, p. 26) agree with this view, stating that "the word disaster implies a sudden overwhelming and unforeseen event. At the household level, a disaster could result in a major illness, death, a substantial economic or social misfortune. At the community level, it could be a flood, a fire, a collapse of buildings in an earthquake, the destruction of livelihoods, an epidemic or displacement through conflict. When occurring at district or provincial level, a large number of people can be affected. Most disasters result in the inability of those affected to cope with outside assistance".

In yet a further definition, Coles and Buckle (2004, p. 3) defined disaster as "a serious disruption to community life which threatens or causes death or injury in that community and/or damage to property which is beyond the day-to-day capacity of the prescribed statutory authorities and which requires special mobilisation and organisation of resources other than those normally available to those authorities". Similarly, disasters are defined as "deadly, destructive, and disruptive events that occur when a hazard interacts with human vulnerability. Disasters are significant societal events that injure and kill people, damage infrastructure and personal property, and complicate the routine activities people undertake on a daily basis (e.g., bathing, cooking, travelling, going to school, working, etc.)" (McEntire, 2015, p. 3). On the other hand, according to Iyer and Mastorakis (2006, p. 2), disaster is "a dynamic mechanism that begins with the activation of a hazard and flows through the system as a series of events, in a logical sequence to produce a loss". Using a narrower concept, Iyer and Mastorakis (2006, p. 2) define disaster as "an unintentional and unplanned event, for which a significant comprehensive emergency management plan should be included and developed".

In general, there are two common points in all definitions. Firstly, events that are concentrated in time and space. Lindell (2013) emphasises that the difficulty in identifying the time of the disaster impact is a common feature of disaster, in addition to the problem of identifying disaster impact zones because they are not neat circles. Lindell (2013) stated that an earthquake that might cause 50 deaths in a few minutes can be distinguished from automobile accidents that cause approximately 34,000 per year in the US. Secondly, physical harm and social disruption may occur due to the normal protections' exceedance during a disaster event (Lindell, 2013). From these definitions, it is apparent that disasters have different characteristics and impact but

have a common element, which is their severity. Thus, no definition of disaster is universally accepted (Shaluf, 2007). By evaluating the above definitions, it can now be concluded that disaster is a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance. The aforementioned definition will be taken in this study.

2.3 Statistics about Disasters

Figure 2.1 clearly shows a rise in disaster numbers each decade from the 1950s to the end of the 20th century (Aitken & Leggat, 2012). It also shows a significant rise in human-made disaster compared to natural disaster, although both rose in the last half of the 20th century. In fact, human-made disasters doubled in number between 1980 and the end of the century (Aitken & Leggat, 2012). Statistics indicate that the number of natural and human-made disasters climbed inexorably in the first part of the 21st century (Dey & Singh, 2006).

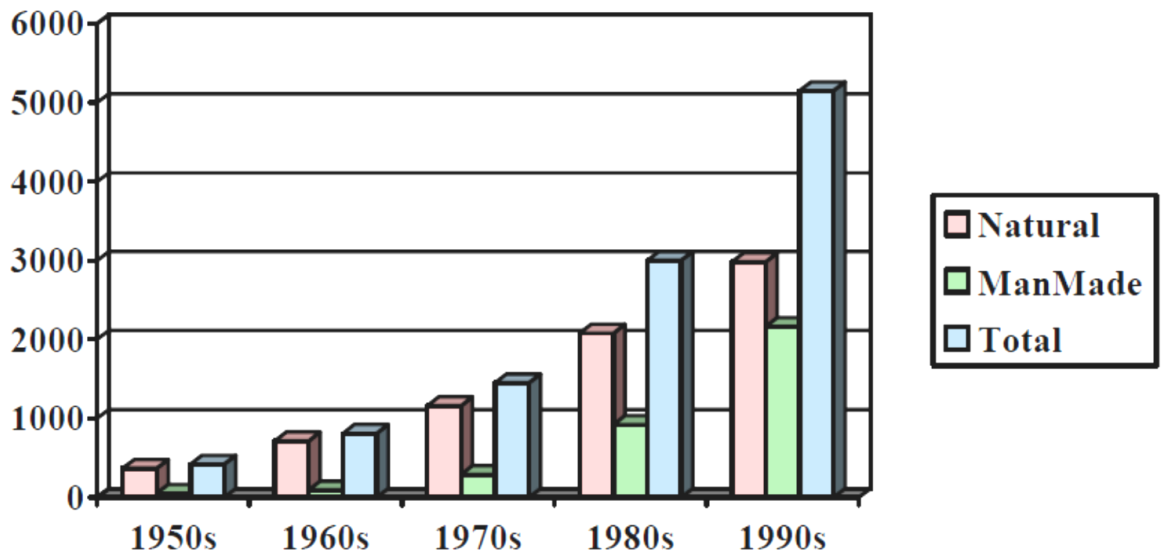


Figure 2.1 Frequency of Disasters Each Decade (Aitken & Leggat, 2012, p. 146)

An event is classified as a catastrophe and included in the sigma database when insured claims and total economic losses exceed 97.7 million, or the number of casualties exceed 20 dead or missing, 50 injured, 2000 homeless. According to such criteria, there were 353 catastrophic events across the world in 2015, up from 339 in 2014. Of the total, 198 were natural catastrophes, the highest ever recorded in one year, and up from 191 in 2014. The remaining 155 events were human-made disasters, also more than the 148 that occurred in 2014 (Bevere et al., 2016).

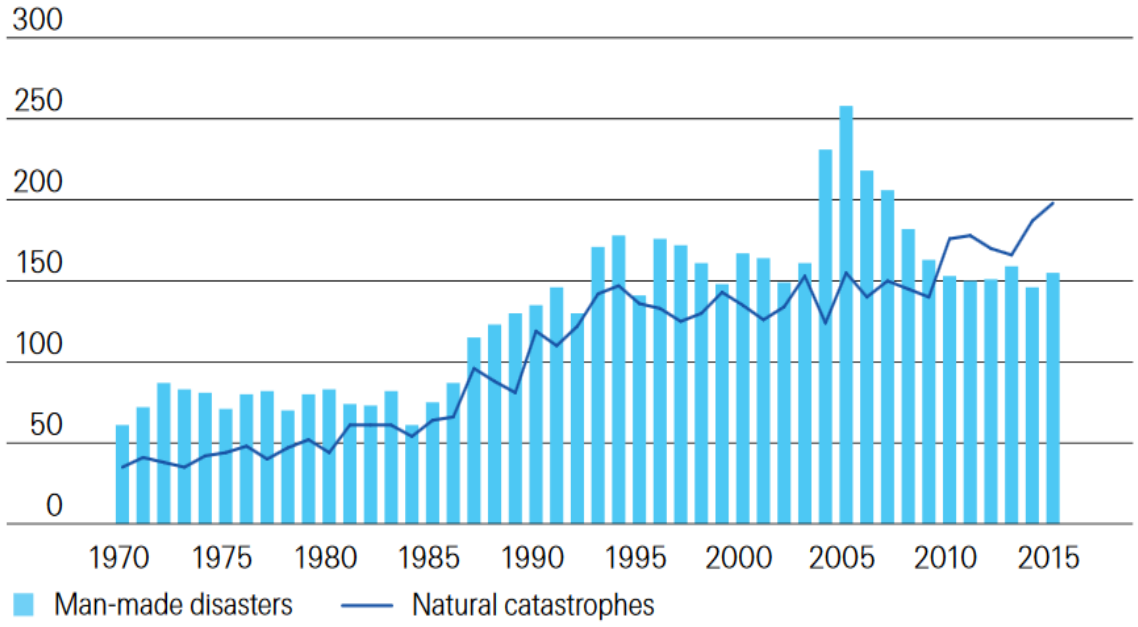


Figure 2.2 Number of Catastrophic Events, 1970–2015 (Bevere et al., 2016, p. 2)

It can be seen from Figure 2.2 above that there were a greater number of human-made disasters than natural catastrophes between 1970 and 2010, at which point, natural catastrophes increased above the number of human-made disasters.

2.4 Types of Disasters

Disaster phenomena have been studied by research centres all over the world. Sometimes different terminology may be used to classify disasters by different researchers. The views of academics on disaster types are summarised below.

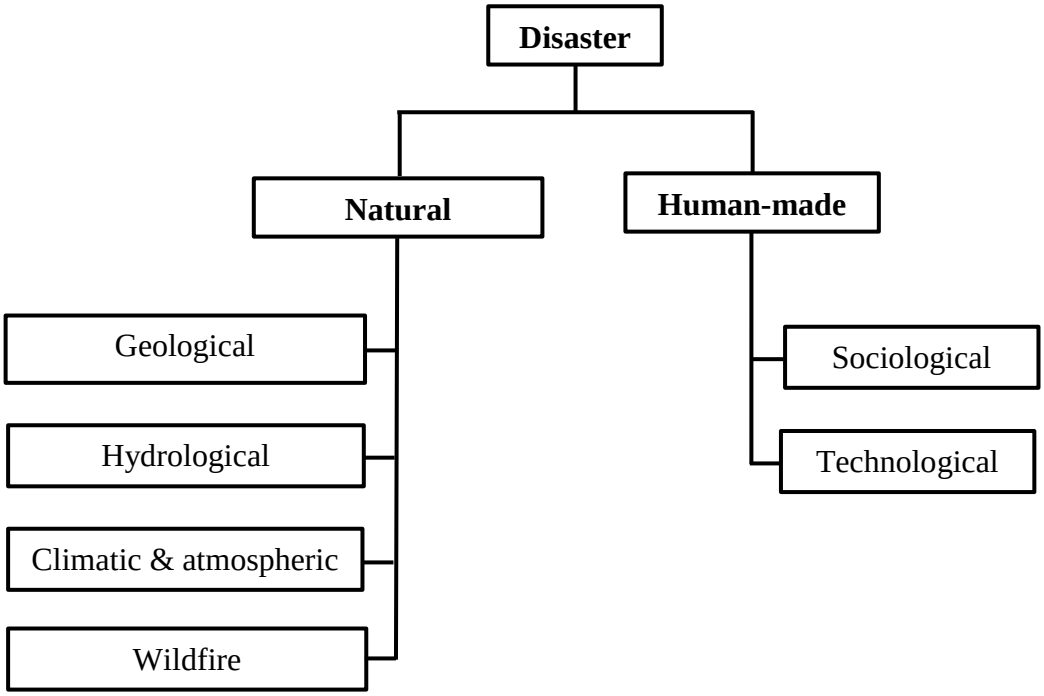


Figure 2.3 Types of disasters (Biswas & Choudhuri, 2012, p. 13)

Disasters are mainly classified by many researchers into two groups: natural disaster and human-made (Biswas & Choudhuri, 2012; Carrillo et al., n.d.; Fischer, 2008; Iyer & Mastorakis, 2006; Moe & Pathranarakul, 2006; Zimmerman, 1985). Figure 2.3 illustrates the different types of disaster. However, certain research such as Moe and Pathranarakul (2006) call human-made disaster by a different name; that of "technological disaster".

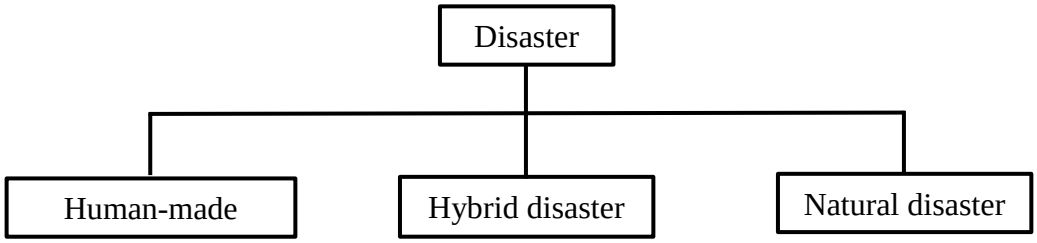


Figure 2.4 Types of disasters (Shaluf, 2007, p. 705)

On the other hand, Shaluf (2007) classified it into three groups: natural, human-made and hybrid disasters as shown in Figure 2.4. Similarly, Hood and Jackson (1992, p. 112) categorised it into purely natural disasters, hybrid disasters and purely social disasters. What follows is a description of these types.

2.4.1 Natural Disaster

Broadly, a natural disaster has been defined as a consequence when humans are affected by a natural hazard (e.g., volcanic eruption or earthquake). Human vulnerability, caused by the lack of appropriate emergency management, leads to environmental, financial, or human impact (Biswas & Choudhuri, 2012, p. 14). In a similar way, Pelling et al. (2004, p. 98) defined it as "a serious disruption triggered by a natural hazard causing human, material, economic or environmental losses, which exceed the ability of those affected to cope". Carrillo et al. (n.d., p. 28) state that these types of disaster occur naturally in proximity to, and pose a threat to, people, structures or economic assets. Biological, geological, seismic, hydrologic, or meteorological conditions or processes in the natural environment caused these types of disaster (e.g., cyclones, earthquakes, tsunami, floods, landslides, and volcanic eruptions). It is widely known that "Acts of God" are often termed as natural disasters (Shaluf, 2007). Natural disasters are classified by Biswas and Choudhuri (2012) into four types (geological, hydrological, climatic & atmospheric, and wildfire) as shown in Figure 2.3. However, Turner and Pidgeon (1997) cited in Shaluf (2007, p. 707) classified it in a different way, namely, natural phenomena beneath the earth's surface, natural phenomena of complex physical origin on the earth's surface, metrological/hydrological phenomena and biological phenomena. Finally, it is important to mention that natural disasters are considered catastrophic events, over which man has no control, resulting from natural causes such as volcanic eruptions, tornadoes, earthquakes, etc. (Shaluf, 2007).

2.4.2 Human-Made Disaster

A major term of interest for this study is that of human-made disaster which is often referred to as human-made disaster. Human-made disaster has been defined as human action, error, negligence, or involving the failure of a system which caused disasters (Biswas & Choudhuri, 2012, p. 14). Similarly, Carrillo et al. (n.d., p. 25) define it as "emergency situations of which the principal, direct causes are identifiable human actions, deliberate or otherwise. Situations in which civilian populations suffer casualties, losses of property, basic services and means of livelihood as a result of war, civil strife or other conflicts, or policy implementation are mainly involved in it. People are forced to leave their homes, in many cases, giving rise to congregations of refugees or externally and/or internally displaced persons as a result of civil strife, an airplane crash, a major fire, oil spill, epidemic, terrorism, etc." Iyer and Mastorakis (2006, p. 3), in a similar way, define it as the result of various untoward incidents. Shaluf (2007), on the other hand, defined it as those catastrophic events that result from human decisions.

Whereas the frequency and severity of natural disasters should be acknowledged, Harding (2007) states that human-made disasters are broader in scope and consequences. Furthermore, human-made disasters provoke a serious disruption of the agriculture, economy and health-care sectors of a society, typically producing long-lasting effects that perpetuate underdevelopment. To sum up, disaster management has traditionally emphasised natural hazards rather than human-made technological hazards (Zimmerman, 1985). This study will shed light on human-made disasters stemming from terrorism in Iraq.

2.4.2.1 Types of Human-Made Disasters

Biswas and Choudhuri (2012) categorised human-made disasters into two types: technological and sociological. Technological disasters are the results of the failure of technology, such as transport disasters, engineering failures, or environmental disasters. Sociological disasters have a strong human motive, such as war, riots, criminal acts and stampedes (Biswas & Choudhuri, 2012, p. 14). However, the International Federation of Red Cross and Red Crescent Societies (2003) classified it by its occurrences, that can be sudden or long-term. Sudden human-made disasters include mine, structural and building collapses when this occurs independently without any outside force. Moreover, land, sea, and air disasters are all human-made disasters. Long-term human-made disasters tend to refer to international and national conflicts. Nevertheless, Turner and Pidgeon (1997) cited in Shaluf (2007, p. 707) categorised it due to its causes: (see Figure 2.5)

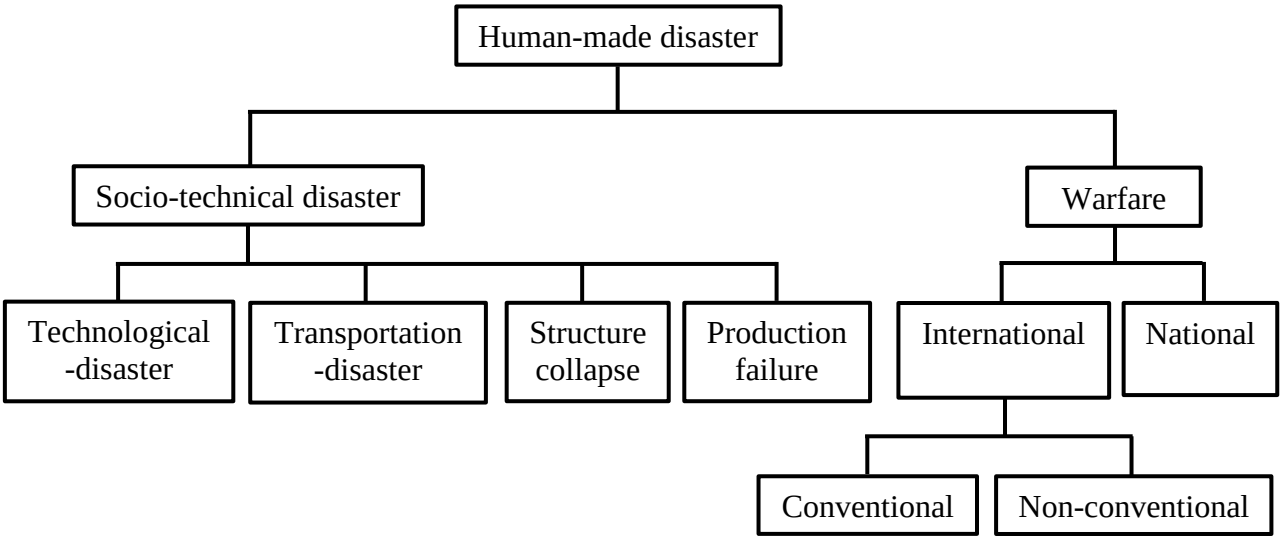


Figure 2.5 Types of Human-Made Disasters (Shaluf, 2007, p. 705)

- **Caused by warfare:**

1. Conventional warfare, including blockades and sieges; and
2. Non-conventional warfare (biological, chemical and nuclear).

- **Caused by accidents:**

1. Vehicular (ships, cars, planes, trains);
2. Drowning;
3. Collapse of buildings and other structures;
4. Explosions;
5. Fires;
6. Biological; and
7. Chemical, including poisoning by pesticides and pollution.

2.4.3 Hybrid Disasters

According to Shaluf (2007), hybrid disasters are a result of both human error and natural forces. The extensive clearing of jungles causing soil erosion, and subsequently heavy rain causing landslides is considered one of many examples of hybrid disasters. In a similar way, Hood and Jackson (1992) cited in Shaluf (2007, p. 710) defined it as a compound of human decisions and volatile natural forces (e.g. floods ravage communities built on a known flood plain).

As shown in Table 2.1, Shaluf (2007, p. 706) summarised natural, human-made and hybrid disasters, and disastrous events.

Table 2.1 Types of Disasters (Shaluf, 2007)

Disaster Type	Sub-disaster			Name of Disaster
Natural	Natural phenomena beneath the Earth's surface			Earthquakes Tsunamis Volcanic eruptions
	Topographical phenomena			Landslides Avalanches
	Meteorological/Hydrological phenomena			Windstorms (cyclones, typhoons, hurricanes) Tornadoes Hailstorms Floods Drought Heat waves/cold waves
	Biological phenomena			Infestations (locust swarms, mealy bug) Epidemics (cholera, dengue, ebola, malaria, measles, meningitis, yellow fever, HIV/AIDS, tuberculosis)
Man-made	Socio-technical	Technological disasters		Fire Explosions (munitions explosions, chemical explosions, nuclear explosions, mine explosions) Leakage Toxic release Pollutions (Pollution, acid rain, chemical Pollution, atmospheric pollution) Structural collapse of physical assets
		Transportation disasters		Air disasters Land disasters Sea disasters
		Stadia or other public places failures		Fire Structural collapse Crowd stampede
		Production failure		Computer system breakdown Distribution of defective products
	Warfare	National		Civil war between armed groups from the same country Civil strikes Civil disorder Bomb threats/terrorist attack
		International	Conventional war	War between two armies from different countries Sieges Blockades
			Non-conventional war	Nuclear Chemical Biological
Hybrid	Natural and man-made events			Flood ravage community built on known floodplain Location of residential premises, factories, etc., at the foot of an active volcano, or in an avalanche area Landslides

To sum up, sometimes natural and/or human-made disasters trigger subsequent disasters such as displaced people (International Federation of Red Cross and Red Crescent Societies, 2003). The subsequent disasters have social and economic impacts. Furthermore, the disruption of normal community functions through human-made disaster must be recognised for its broad-based, long-term impact (Harding, 2007). For this reason, human-made disaster with particular reference to terrorism in Iraq has been highlighted in this research (see Figure 2.6).

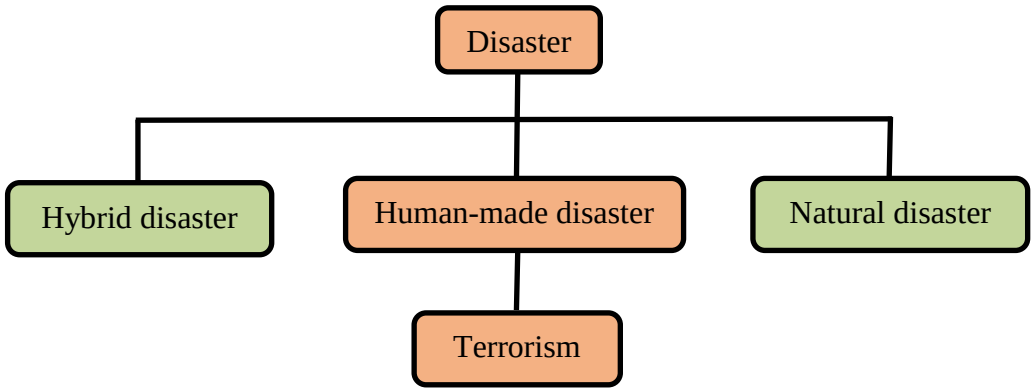


Figure 2.6 Type of Human-made Disasters Highlighted in this Research

2.5 Terrorism

Terrorism is considered the most salient hazard due to a remarkable upsurge in terrorist acts during the past decade particularly in Iraq (see Table 1.1). McEntire (2015) considered terrorism as one of the most deadly civil/conflict risks throughout history, and has unfortunately become even more pronounced in the past few years. Helbing, Ammoser, and Kühnert (2006) stated that terrorist attacks have become an increasingly serious concern. In many cases, terrorists try to gain public awareness for certain political or religious interests or a disregarded problem, for instance, a suppressed minority. The terrorist attacks on 11th September 2001 in New York and on 11th March 2004 in Madrid are the best illustration of such attacks.

After the events of 11 September 2001, the world changed, becoming a more dangerous and uncertain place, and no-one can consider themselves safe or immune from the threat of terror. According to Davies (2005), the threat of suicide bombers and the events of 9/11 have brought a completely new meaning to terrorist activity. As there is a willingness among terrorists to use almost any means to make chaos and wreak death and destruction, leading to an environment of fear caused by the threat alone. In agreement, Helbing et al. (2006) noted that in many cases, the ultimate goal of terrorists is maximum damage. Not only damage, Lemyre et al. (2005) indicated terrorism events, such as radiological, chemical, biological, and nuclear have

psychosocial consequences both at the emotional levels and normal behavioural and the clinical level. Arora and Arora (2013) noted that it is important to briefly mention the threat of a radiological or chemical attack being integrated into a suicide bombing. Though these have not yet been used with success, it has been attempted in bombings in Iraq using chlorine tankers. Arora and Arora (2013) added that first responders must have a basic knowledge of what to expect during suicide attack events along with their specific security, safety and management considerations. An understanding of the threat posed by explosive devices specifically targeting first responders is considered a key to such awareness. While the most important aspects of responder knowledge are awareness of the threat of secondary devices. In addition to that the most important initial steps in suicide attack responses are ensuring that the threats on scene have been neutralised (Arora & Arora, 2013).

Terrorism is defined in many ways by many scholars and institutions. According to Frykberg and Tepas 3rd (1988, p. 569), terrorism is the unlawful exercise of random and ruthless violence against property or individuals, usually innocent civilians, in order to intimidate governments or societies for political or ideological purposes. In a similar way Panzer, Butler, and Goldfrank (2003, p. 2) defined terrorism as the illegal use or threatened use of force or violence to instil fear in populations, and an intent to coerce societies or governments by inducing fear in their populations. While Miron and Cernuşca (2008, p. 65) and Romanian Law (535/2005) defined terrorism as "the unlawful use or threatened use of force or violence against people or property to coerce or intimidate governments or societies, often to achieve political, religious, or ideological objectives". Similarly, McEntire (2015) defined terrorism as "the threat or use of violence to intimidate someone or a government. The perpetrators usually have ideological motives and a political objective to reach". Perry and Lindell (2003) argue that whilst it is possible to use the general basic structures of disaster response management, in terms of using the planning knowledge, terrorist incidents are very different to other types of disaster, having unique aspects which need to be considered in the response plans.

There are various terrorist attacks that have occurred throughout the world. Different countries have faced major attacks, such as Germany, Russia, Spain, Iraq, the United Kingdom, Kenya, and Afghanistan. Suicide bombings, for instance, are become common in the Middle East (McEntire, 2015). In the case of Iraq, it is widely agreed that terrorists did not have a hold on any part of Iraq before the US invasion. However, it is also generally believed that Iraq contains many terrorists and terrorist organisations. Therefore a step back will be suggested rather than forward (Fischer, 2005). As a result, violence in Iraq has become normalised, ranging from the

Iraqi and US military assaults and sectarian militias, threat of suicide bombings, to violent street crime (Wong et al., 2005).

As discussed above, terrorist threats are a reality in Middle Eastern countries, particularly in Iraq. Accordingly, terrorist operations are the main reason leading to the increased number of disasters in Iraq. Thus, evaluation needs to be conducted to the system of disaster management in Iraq due to these operations.

2.6 Disaster and Conflict

Conflicts can be violent and militarised. As conflicts multiply, interact and escalate, the domestic knowledge infrastructure of societies is frequently targeted directly and indirectly (Bush & Duggan, 2015). Basically, conflicts can be prolonged or shortened by disasters (Keefer, 2009). Further, long-term disasters tend to refer to national and international conflicts (Shaluf & Ahmadun, 2006). Keefer (2009) believes that disaster recovery efforts can be improved or undermined by conflicts. In addition, disaster relief is often disrupted by conflict. Damage resulting from armed conflict, depending on the nature of the armaments employed and the possibilities of secondary damage linked to the conflict (e.g. fire, flood), may resemble the impact of natural disasters (Teijgeler, 2006). Based on Wisner et al. (2004), conflicts have continued to exacerbate natural extreme events such as drought in Afghanistan and the volcanic eruption in eastern Congo (2002). According to Keefer (2009), the reason behind the cause or exacerbation of conflict is that the underlying political conditions that weaken government response to natural hazards also make governments more vulnerable to insurgency. An association between conflict and disaster can be promoted by the political and strategic factors and causes distortions in the allocation of disaster relief (Keefer, 2009). Goodyear (2009) stated that the central link between hazards, disaster, conflict and economic development is vulnerability. In agreement, Humayun and Al-Abyadh (2014) noted that the vulnerability of the Iraqi people has been exacerbated by different kinds of hazards such as acute poverty, displacement and the continuing effects of conflict. According to Paffenholz (2005), two-thirds of the countries of the world are either suffering from political tensions and violent conflict or find themselves in the aftermath of a destructive conflict or war.

Disasters have an impact on the economic development and human development of a country (Wisner et al., 2004) causing devastation at the household / family level (when livestock, crops, homes and tools are repeatedly destroyed). The impact is also felt at national level, when roads, bridges, hospitals, schools and other facilities are damaged. The pattern of such frequent

devastation from natural disaster can be exacerbated and complicated by human action – both by ineffective efforts to deal with the disaster and by the increased vulnerability that ensues from potential conflict (Wisner et al., 2004).

Human-made disasters (at the outset) often have a greater impact than natural disasters in the detrimental effects on people. Theft, war, civil disorder, terrorism, neglect and vandalism are human factors in the wilful destruction of the world (Teijgeler, 2001). Armed conflict and acts of terrorism remain particularly disturbing, since they have such a devastating effect on society and the heritage of countries (Teijgeler, 2006).

2.7 Disaster Management

Disaster management is a very difficult, complex, and dangerous activity (Madry, 2015). The aim of disaster management, taking this broad approach, is to be proactive and reduce the major incident occurring or the likelihood of a disaster, and to reduce the consequences should one occur (Handmer & Parker, 1991). The following is a brief review of disaster management definitions. The term, disaster management can be defined as "the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular, preparedness, response and recovery in order to lessen the impact of disasters" (IFRC, 2017). Disaster management can also be defined as "an integrated process of planning, organising, coordinating and implementing measures that are needed for effectively dealing with its impact on people. This includes prevention, mitigation, capacity building, preparedness, response, assessment, rescue and rehabilitation" (Deshmukh, Rodrigues, & Krishnamurthy, 2008). Lettieri et al. (2009, p. 117) defined disaster management as administrative decisions and the body of policy, the actors, the operational activities and technologies that relate to the several phases of a disaster at all levels. (Dey & Singh, 2006; Vasilescu et al., 2008) agree with this view, stating that it includes all the activities which help to avoid, reduce the impact or recover from disaster loss, and these can be implemented before, during or after a disaster. However, according to Carrillo et al. (n.d., p. 27), disaster management is a massive task which is not limited to any specific location. They disappear as quickly as they appear. Thus, proper management is imperative to optimise the ability of planning and response. Due to restricted resources, it is essential to co-operate efforts at the governmental, community and private fields. This scale of collaboration needs an organised and coordinated effort to prepare for, mitigate against, recover from, and respond to emergencies and their effects in the shortest possible time. In yet a further definition, Iyer and Mastorakis (2006, p. 2) defined disaster management as multiple institutional approaches which

are required at all phases of a disaster. Industry is one of the institutions interested in developed planning to address a disaster. Resource assessment, diagnosis and feedback in order to satisfy the goal of disaster reduction are a requirement of perfect planning. Dedicated commitments are required for disaster management by central, state and district levels. An effective disaster plan could be maintained by a structure with obviously defined authority and adequate budget. In general, it can now be concluded that better elaboration, planning, strategic mobilisation, training for relief project workers and techniques to push aid through unresponsive governments should be stressed by a disaster management system. Indeed, obvious procedures for systematic behaviour by different relief organisations will lead to more effective and efficient relief tasks (Lai, He, Tan, & Phua, 2009).

2.7.1 Disaster Management Cycle

In order to better understand the importance of the disaster response phase in the disaster management cycle, it is first important to provide a definition of what the disaster management cycle is. According to Warfield (2008) cited in Vasilescu et al. (2008), the disaster management cycle represents the ongoing procedure by which governments, civil society, and businesses plan for and decrease the influence of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. Suitable actions at all cycle phases cause better warnings, greater preparedness, reduced vulnerability or the forbidding of disasters during the following repetition of the cycle. He also added that the whole disaster management cycle contains the modelling of public policies and plans that either modify the causes of disasters or mitigate their effects on people, property, and infrastructure. Using a narrower concept, Carrillo et al. (n.d., p. 27) define the disaster management cycle as "a cycle with phases that reduce or prevent disasters". Whereas Iyer and Mastorakis (2006, p. 3) define it as a logical, integrated and progressive sequence of activities as a cycle of preparedness and action followed by disaster management.

Figure 2.7 Disaster Cycle (Gospodinov & Burnham, 2008, p. 28)

Iyer and Mastorakis (2006, p. 3) identify the stages of disaster management cycle as, risk reduction, readiness, response, and recovery. Gospodinov and Burnham (2008, p. 28) divided the disaster cycle into four phases, namely, response, reconstruction, mitigation, and preparedness see Figure 2.7. Similarly, Muaafa et al. (2014) classify disaster management stages to mitigation, preparedness, response, and recovery. In a similar way, Vasilescu et al. (2008, p. 49) presented the phases of the disaster management cycle but in a different style (see Figure 2.8). It can be seen that Vasilescu et al. (2008, p. 49) classification have more stages than Gospodinov and Burnham (2008, p. 28) one but it already includes the four stages of Gospodinov and Burnham (2008, p. 28). These divisions use the same concepts but in different terms.

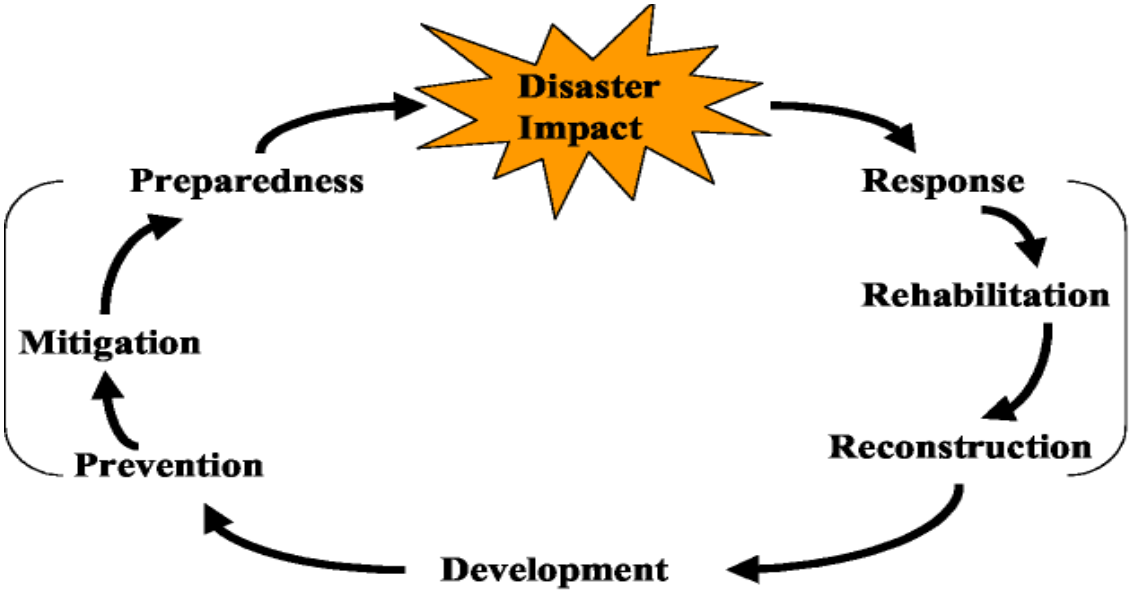


Figure 2.8 Disaster Management Cycle (Vasilescu, Khan, & Khan, 2008, p. 49)

Even though all disaster management phases are interrelated (Muaafa et al., 2014), the focus of this study is on the response stage of terrorism in Iraq (see Figure 2.9). This is because the response phase is identified as the most critical phase of the disaster management life cycle (Baharin et al., 2009) since delays of minutes can cost lives and property (Lindell et al., 2006).

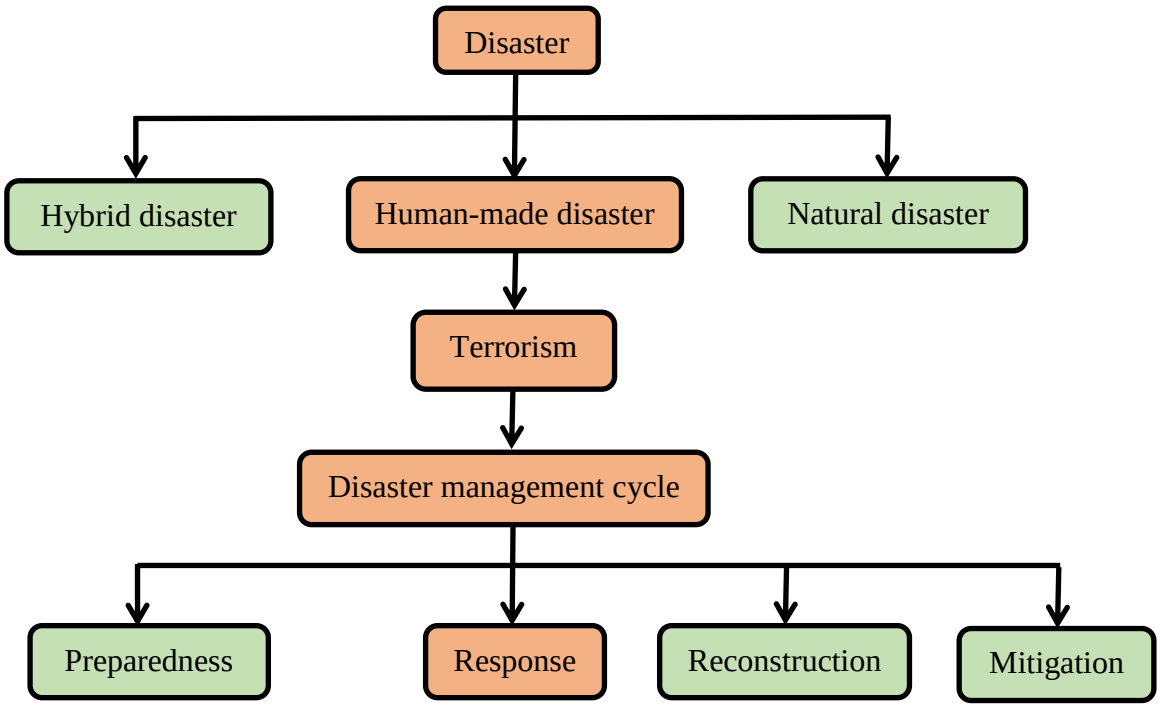


Figure 2.9 Response Stage Highlighted in this Research

2.8 Disaster Response Management

Having defined what is meant by the disaster management cycle, disaster response management definitions will be reviewed. Disaster response can be defined as action "taken immediately before, during, or directly after an emergency occurs, to save lives [and] minimise damage to property" (Godschalk, 1991, p. 136) cited in (McEntire, 2015). In the same way, response can be defined as "activities taken immediately before, during, or directly after an emergency that saves lives, minimize property damage, or improve recovery; e.g., emergency plan activation, activation of emergency systems, emergency instructions to the public, emergency medical assistance, manning emergency operations centres, reception and care, shelter and evacuation, and search and rescue" (McLoughlin, 1985). Or it is "the provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected" (UNISDR, 2009). While Vasilescu et al. (2008, p. 47) defined response activity as initiatives taken in response to a disaster with the purpose to achieve early recovery and rehabilitation of affected communities, immediately after disaster strikes. Likewise, Madry (2015) defined response as "the immediate set of actions taken to save lives and property in a disaster, including search and rescue, sheltering, emergency medical assistance, and more". In the same way, response is defined as "the set of actions conducted during the initial impact of these emergency situations, including those to save lives and prevent further property damage providing

emergency relief to victims of natural or human-made disasters" (Barbarosoğlu & Arda, 2004). Carrillo et al. (n.d., p. 50) agree with this view, stating that disaster response is "the sum total of actions taken by people and institutions in the face of disaster. These actions commence with the warning of an oncoming threatening event or with the event itself if it occurs without warning". On the other hand, Iyer and Mastorakis (2006, p. 3) define it as "the core of the initial response to a disaster provided by the emergency services and thereafter, depending on its nature and scale by the local authorities and voluntary and utility services". While Nazarov (2011) defined response as "the actions taken to save lives and prevent further damage in a disaster or emergency situation. Response is putting preparedness plans into action. Response activities may include damage assessment, search and rescue, firefighting, and sheltering victims. Response activities take place during an emergency" (Nazarov, 2011). Using a narrower concept, the World Health Organization (2002, p. 22) defined it as a set of activities implemented after the impact of a disaster. Coppola (2015, p. 305) stated that the beginning of the response process is as soon as the hazard event has become imminent and lasts until the emergency is declared to be over.

Having evaluated the views on disaster response management, the following has been established as the working definition for disaster response management: "actions taken immediately before, during, or directly after an emergency occurs, to save lives, minimize property damage, to achieve early recovery and rehabilitation of affected communities, immediately after disaster strikes".

According to Madry (2015) professional disaster management is a very serious business due to both the difficulty and scope of a disaster response, and also due to the fact that lives and property are at stake. In agreement, Hofmann, Betke, and Sackmann (2015) stress that an efficient, effective, and flexible process execution in disaster response management is crucial to the safety or even the survival of systems, people, and/or properties. Responding to disaster is a serious challenge because disaster requires serious decisions that must be made in critical situations (Platt, 2015), in addition to that different types of management skills and information are also required in different phases of disaster response (Comfort et al., 2004). In agreement, Uhr et al. (2008) indicated that the response operation is complex. Muaafa et al. (2014) agree with this view and added, in some cases, the complexity of the disaster response mission will be increased because of the urgency of a fast response and the high volume of potential casualties. In agreement, based on Ogasawara, Tanimoto, Imaichi, and Yoshimoto (2014), during a disaster, response activities must operate in a constantly changing environment. If the

disaster has produced large amounts of damage over a wide area with numerous unexpected events, mounting an accurate and rapid response will be difficult. Recent disasters have presented that it is difficult for policy makers to respond to citizen reactions to disasters (Pennings & Grossman, 2008). Further, Baharin et al. (2009) and Hale et al. (2005) stated that the response phase is one of the critical phases in the Disaster Management System life cycle. As a result, developing an efficient and effective disaster response strategy is crucial (Muaafa et al., 2014). Moreover, Sakurai, Watson, and Kokuryo (2016) stress that developing government or community capacity to mobilise responses to a future disaster is important. Not only that important, Hale et al. (2005) encourage a distinct research effort, due to the unique environment present during disaster response, such as stress, time pressure, and immediate risk of significant loss. Thus, in the USA, since 9/11, there have been considerable efforts to propose improvements in the ability to respond to emergencies (Turoff, Chumer, de Walle, & Yao, 2004). In Australia, however, responses normally occur in three stages, within the structure of the Australian Federal Government. Firstly, assessing the problem is required to develop possible responses, based on this assessment, by department or inter-government committee that is responsible for policy administration in the area. Secondly, the level of response will be decided on cabinet depending on recommendations developed either at the departmental level or as the result of interdepartmental consultations. Thirdly, the implementation of cabinet decisions will be described by the department or departments involved. Accordingly, existing legislation might be used or new legislation might be passed in such decisions (Prideaux, 2004).

The key problem with this phase is it is widely believed by the public that the behavioural response to disaster is deviant and chaotic (Fischer, 1998, 2008). Previously, Fischer (2005) noted that the behavioural response is actually very altruistic. While Comfort (2002) mentioned that the effective mobilisation of response to extreme events on a large scale is considered one of the least understood problems in public management. Comfort et al. (2004) gave a reason for this problem, stating that the ratio of demand for assistance to capacity to provide resources, in disaster response and recovery operations, varies over time. Such immediate demands, in the initial stages of disaster, involve actions to protect lives and provide assistance to injured persons. As a result, the organisations that are responsible for first-response seek to meet urgent demands of disaster victims under tight time constraints. Arora and Arora (2013) added that first responders must have a basic knowledge of what to expect during suicide attack events along with their specific security, safety and management considerations. An understanding of the threat posed by explosive devices specifically targeting first responders is considered a key

to such awareness. While the most important aspect of responder knowledge is awareness of the threat of secondary devices. In addition to that the most important initial steps in suicide attack responses are ensuring that the threats on scene have been neutralised (Arora & Arora, 2013). Comfort (2002) further stated that the knowledge base to support response operations in such an event needs to be scalable. In addition to this, Eyre (2006) states that the ability to cope is related to a range of risk factors that happened before, during and after the disaster. Making the situation as normal as possible can help survivors to cope better, therefore to protect social resources and signpost further sources of support are fundamental to good psycho-social response.

Disasters occur all over the world, and the response is clearly influenced by the level of development, historical context, local culture, and the national readiness to respond (Madry, 2015). The efficient response to a disaster plays an important role in reducing its impact on affected victims (Muaafa et al., 2014). An effective response to disaster includes the ability to improvise in the face of unexpected situations as well as the ability to harness benefits from preparedness activities (Handmer & Parker, 1991). Comfort, Ko, and Zagorecki (2003) and Comfort et al. (2004) show that the efficiency of disaster response is affected by the initial magnitude of the disaster, the number of jurisdictions engaged, the type and amount of resources available, and the type of response strategies used. Madry (2015) considered that the structure of the disaster response officials is the key to the response, while Miller (2007) noted that time is another element to consider when examining disaster response. Miller (2007) added that community response is formed by pre-existing social organisation (Miller, 2007). Regarding the effectiveness of the organisational response, Fischer (2005) presented three factors which affected the organisational response, namely: the extent to which emergency plans are rehearsed; the degree of prior disaster experience; and the level of prior planning. Whilst Comfort (2002) listed three different factors, namely: pre-disaster planning among organisations to identify what information will be required; how this information may be accessed and rapidly searched, exchanged; and absorption of valid information regarding sudden, damaging events transmitted through a network of organisations that crosses disciplinary, organisational, and jurisdictional boundaries required for this process.

On the other hand, Cardona (2005) believed that in order to reduce vulnerability, all types of risk management capabilities need to be strengthened. Furthermore, existing risks and likely future risks should also be identified. This cannot be achieved without an adequate measure of risk and monitoring to determine the effectiveness and efficiency of corrective or prospective

intervention measures to mitigate or prevent disasters. Similarly, Ugwu and Ihejirika (2013) emphasised that when disaster occurs the needed assessment process has become an initial process to follow up; it is a problematic or daunting task to understand the required need to administer more accurately and swiftly in such situations. Cardona (2005) also mentions that the lack of a comprehensive conceptual framework of disaster risk to facilitate a multidisciplinary evaluation and intervention resulted from the difficulty in achieving effective disaster risk management. Most existing indices and evaluation techniques have not adequately expressed risk and are not based on a holistic approach that invites intervention. To sum up, Cardona (2005) stated that evaluation and follow-up should be undertaken using methods that facilitate an understanding of the problem and that can help guide the decision-making process.

So for all these reasons, research and evaluation provide disaster practitioners with the knowledge needed for preparedness and response. They also provide good platforms to exchange knowledge. As humanitarian crises become more complex, with new and varied actors on the ground, strong partnerships and collaboration between experts, organisations, and disciplines is vital to build capacity.

In summary, the majority of the aforementioned definitions and views agree that disaster response management is an action taken immediately after disaster strikes. The salience of this stage is due to its deviant and chaotic nature. Various scholars in disaster management literature presented factors which affected the response stage. Accordingly, this stage needs to be scalable. Furthermore, due to the salience of the disaster research model of behavioural response to disaster as applicable to terrorism events (Fischer, 1998, 2005, 2008), the focus of this study is at the response stage of human-made disasters in Iraq.

2.8.1 Aims of Disaster Response Management

Turning now to the aims of disaster response management, much research has listed it in order to explain the importance of this phase. According to Carrillo et al. (n.d., p. 52) the overall aims of disaster response are:

1) To ensure the survival of the maximum possible number of victims, keeping them in the best possible health in the circumstances.
2) To repair or replace damaged infrastructure and regenerate viable economic activities. To do this in a manner that contributes to long-term development goals and reduces vulnerability to any future recurrence of potentially damaging hazards.

3) To re-establish self-sufficiency and essential services as quickly as possible for all population groups, with special attention to those whose needs are greatest: the most vulnerable and underprivileged.
4) In cases involving population displacements (due to any type of disaster) the aim is to find durable solutions as quickly as possible while ensuring protection and assistance as necessary in the meantime.
5) In situations of civil or international conflict, the aim is to protect and assist the civilian population, in close collaboration with the International Committee of the Red Cross (ICRC) and in compliance with international conventions.

While the World Health Organization (2002, p. 22) listed it in a different way:

a) Assess the needs.
b) Reduce the suffering.
c) Limit the spread and the consequences of the disaster.
d) Open the way to rehabilitation.

Several other authors have mentioned the aims of disaster response management. Coppola (2015, p. 305) stated that aims of response management are limiting injuries, loss of life, and damage to property and the environment that are taken before, during, and immediately after a hazard event. Iyer and Mastorakis (2006, p. 3) points out that the common purpose of disaster response management is to save life and relieve suffering.

2.8.2 Disaster Response Activities

In addition to the aims of disaster response management, various researchers have identified the activities of disaster response management. For instance, Carrillo et al. (n.d., pp. 52-55) identified typical activities of emergency response as:

1) Warning.
2) Evacuation and migration.
3) Search and rescue (SAR).
4) Post-disaster assessment.
5) Response and relief.
6) Logistics and supply.
7) Communication and information management.

8) Survivor response and coping.
9) Security.
10) Emergency operations management.
11) Rehabilitation.
12) Reconstruction.

Whereas Iyer and Mastorakis (2006, p. 3) identified the common elements of response as:

a) Identify the disaster and raise alarm.
b) Notify the emergency services
c) Save life and treat causalities.
d) Activate the emergency plans.
e) Confirm communications are working.
f) Establish control.
g) Manage the developing situation.

The disaster response stage is crucial due to the deviant and chaotic behaviour during responding to disaster (Fischer III, 1998a, 1998b). Moreover, the behavioural response is actually very altruistic (Fischer, 2005). To manage response activities, this research will focus on the four stages of the disaster response stage, namely, Planning, Organising, Directing, and Controlling. These four stages will be followed to represent response activities in an appropriate way (see Figure 2.10). The next section moves on to describe these four stages.

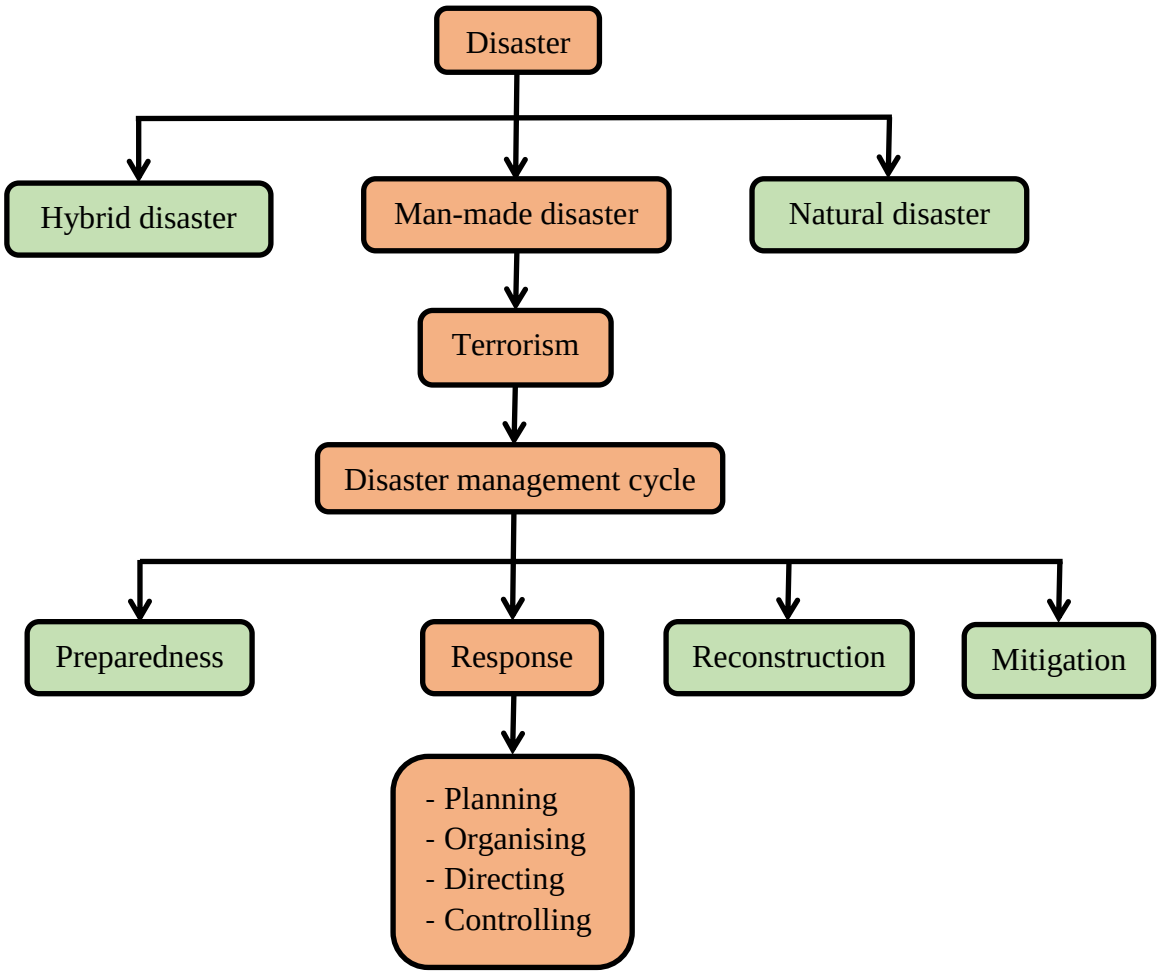


Figure 2.10 The Four Stages of Disaster Response Management

2.8.3 The Stages of Disaster Response Management

It is widely considered that management is an important operational process in this world. According to Cole and Kelly (2011) Management is a "coordinated activities (forecasting, planning, deciding, organising, commanding) to direct and control an organisation". The main intention of management is to establish the essence of proactive performance in our chaotic world as well as to assist an organisation to make the best use of its resources to achieve its objectives. To accomplish these goals, four major managerial functions, namely, planning, organising, leading, and controlling (see Figure 2.11) should be performed. (Jones & George, 2003). Moreover, according to Comfort and Haase (2006) point of view, the various elements of the system in question and the interactions between them should be taken into account to understand a phenomenon. Accordingly, in order to understand best the importance of these four functions and the interactions between them, a definition of every stage will be provided in the sections below.

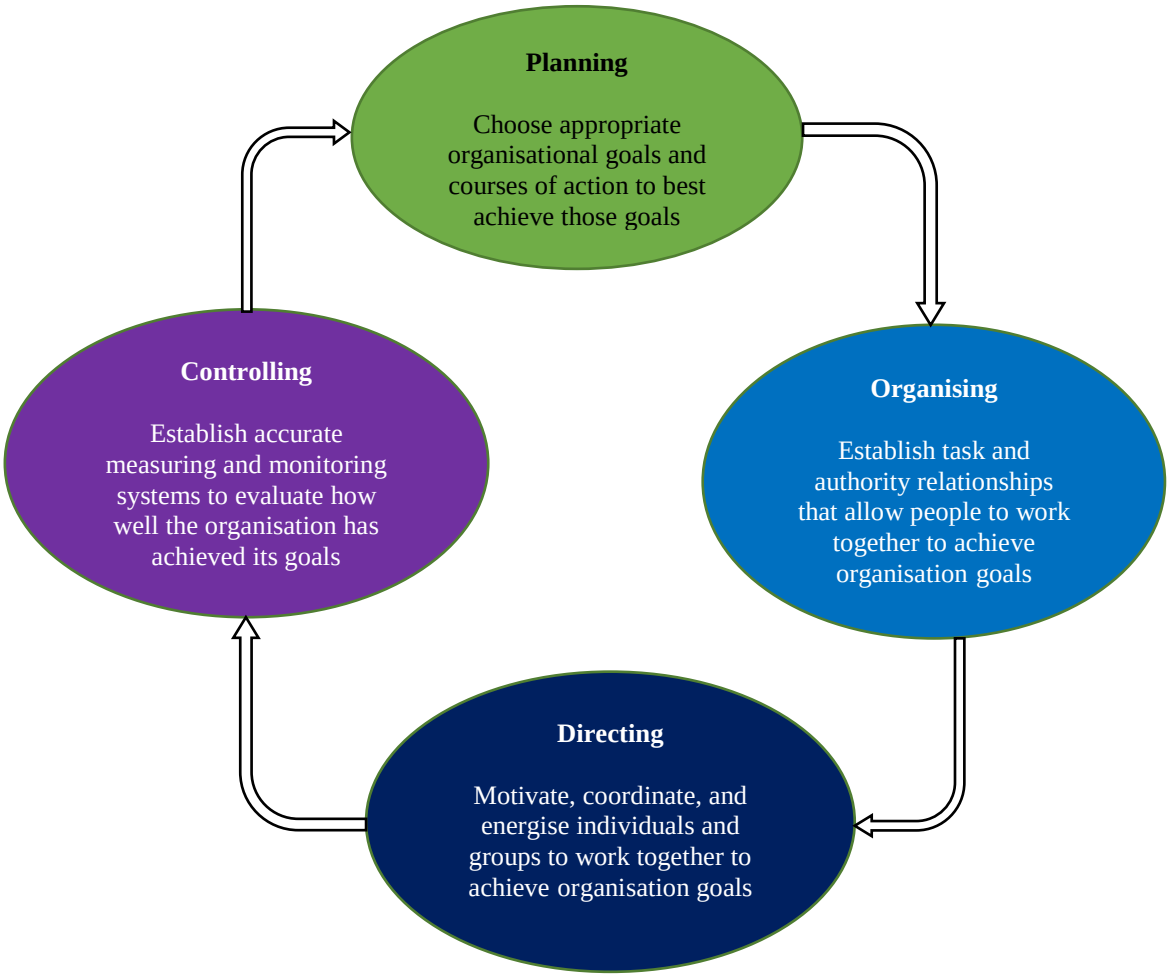


Figure 2.11 Four Functions of Management (Jones & George, 2003, p. 8)

2.8.3.1 Planning Stage

To gain better comprehension of the significance of planning in disaster response events, it is first important to provide a definition of what planning is. Planning is "the formalisation of what is intended to happen at some time in the future; concerns actions taken prior to an event, typically formulating goals and objectives and then arranging for resources to be provided in order to achieve a desired outcome" (Cole & Kelly, 2011, p. 17). In a similar way, Ahuja, Dozzi, and Abourizk (1994, p. 10) stated that planning is "selecting objectives and then establishing programs and procedures for achieving the objectives". Naylor (2004, p. 234) agrees with this view, stating that "planning is the process of setting the objectives of an organisation and the means for their achievement". Cole and Kelly (2011) summarise the planning definition as "an activity which involves decisions about ends (organisational aims/ objectives), means (plans), conduct (policies), and results". However, Koontz and O'donnell (1955, p. 111) contend that good planning must consider the nature of the future environment in which planning decisions

and actions are intended to operate. Koontz and O'donnell (1955, p. 111) and Weihrich and Koontz (2005, p. 98) assert on the importance of planning as it bridges the gap from where we are to where we want to go. Three steps in the planning procedure have been displayed by Jones and George (2003, p. 8):

1. Determining which objectives the organisation will follow.
2. Determining what courses of action to adopt to achieve those objectives.
3. Determining how to assign organisational resources to achieve those objectives.

Within the context of disaster response management, based on Chen, Wu, and Lai (2006) the planning process is critical. In addition, planning and collaboration are important to disaster response (LeClerc, 2015), but at the same time disaster planning is an enormous undertaking (Desforges & Waeckerle, 1991). Kovel (2000) agrees with this view and describes disaster response planning as an incomplete puzzle. Although the pieces of this puzzle were present, there were no guidelines on how to place them together. According to Barbarosoğlu and Arda (2004), the development of a fast response and efficient disaster relief plan poses itself as a complex stochastic decision problem because the decision-makers generally have imprecise and random information about the resource, timing and scope requirements of the disaster prior to the incident. Moreover, disaster planning and crises management have become an important part of the strategic planning process for many organisations (Money & Harrald, 1995). As it is difficult and complex process since no one knows where or when the next disaster may strike (Madry, 2015). Moreover, disaster plans provide effective preparation and training for response measures even they not generally accepted as a final solution (Money & Harrald, 1995). Further, to minimise the cost and effects of emergencies, an effective disaster plan should be taken after all reasonable risk reduction measures. Moreover, to meet the disaster demands, identifying the resources (facilities, personnel, materials and equipment) that are required by disaster response organisations and the demands that a disaster would impose upon those organisations is required for planning process (Perry & Lindell, 2003). Therefore, the planning process is considered the key to effective disaster management from which all related strategies, arrangements, and programs should flow (Emergency Management Australia, 2004). In agreement, May, Colbert, Rea, Wood, and Nara-Venkata (2015) stated that effective disaster response is preceded by effective disaster planning. Further, the overall aim of disaster planning may seem obvious: to save lives and property (Handmer & Parker, 1991). Larson, Metzger, and Cahn (2006) added a well-thought-out and rehearsed response plan saved lives. This view was

also supported by Desforges and Waeckerle (1991), stating that an obvious disaster plan coordinated by experienced and knowledgeable leaders will not only lessen superfluous problems but protect more lives. In agreement, Emergency Management Australia (2004) found that plans and programs preparation for response actions taken, during and immediately after a hazard impact has a significant influence on community's ability to cope with the impact of disasters. Such actions are undertaken to ensure that hazard effects are minimised. Further, building resilient communities is the cornerstone of planning for disaster risk reduction (Humayun & Al-Abyadh, 2014). Within the field of urban management, disaster planning responses to human-made disasters is a growing area of critical debate due to the increasing terrorist attacks on urban areas (Batho, Williams, & Russell, 1999). As such, continuing terrorist attacks not only on urban areas but throughout the world are likely to sustain attention to emergency planning, but particularly in the Middle East (Perry & Lindell, 2003).

To sum up, logically, the response planners should have generic and robust decision models and tools to enhance their disaster response and relief capability and should be proactively prepared for an effective response (Barbarosoğlu & Arda, 2004). Further, realities of the setting in which disaster operations take place should be recognised by planners by concentrating on the essential principles of response, clearly specifying priorities, and minimising the amount of operational detail that restricts flexibility (Perry & Lindell, 2003). Accordingly, proper preparation and planning enable the community to deal better with devastation and death in the wake of disasters (Desforges & Waeckerle, 1991) as well as lives can be saved by conducting a well-thought-out and rehearsed response planning (Larson et al., 2006).

2.8.3.2 Organising Stage

A second management function is organising. Broadly, organising has been defined as “the grouping of activities necessary to attain objectives, the assignment of each grouping to a manager with authority necessary to supervise it, and the provision for coordination horizontally and vertically in the enterprise structure” (Koontz & O'donnell, 1955, p. 240). Further, Cole and Kelly (2011, p. 17) defined organising as “determining activities and allocating responsibilities for the achievement of plans; coordinating activities and responsibilities into an appropriate structure”. However, Naylor (2004) defined it as “an arrangement of all element of an organisation to achieve its strategic objectives”. Similarly, Jones and George (2003) defined organising as a “process to establish a structure of working relationships that allow organisational members interact and cooperate to achieve organisation goals”. Whereas Dixon (2003, p. 27) defined it in another way, stating that, organising is

“coordinating and directing the company’s resources in such a way that the company can carry out its objectives”.

Regarding the organisational response, according to Chen, Sharman, Rao, and Upadhyaya (2008), coordination is an important problem, because it impacts on life and property in the affected area. Despite this fact, it is an understudied research issue (Chen, Sharman, Chakravarti, Rao, & Upadhyaya, 2008). In the area of disaster response, Chen, Sharman, Rao, et al. (2008) stated that coordination has thus far received relatively little scientific attention, despite its obvious significance. Ren et al. (2008) gave reasons for this scarcity in studies as few previous studies have examined what is happening during a disaster, while they often involve a post-disaster evaluation. As a result, little is known about the obstacles and challenges facing the coordinating process, particularly sharing and coordinating information effectively. Chen, Sharman, Rao, et al. (2008) noted that the essential ingredient for disaster response management is effective coordination. As any disaster situation requires a response under temporal and resource constraints and high uncertainty and necessity for rapid decision making, the coordination of the emergency response is demanding. Further, Ren et al. (2008) mentioned that previous studies of organisational coordination in disaster response teams have identified failures resulting from breakdowns in information flow and materials supply across organisational boundaries. In addition to that, Lettieri et al. (2009) stressed that wrong coordination would cause time wasting due to conflicts of resources and ultimately, human and property losses. Lettieri et al. (2009) also noted that efficient labour division and delegation, as well as important technological implementations such as the internet and GIS, are crucial to achieve good coordination. Lettieri et al. (2009) agree with this view and added that professionalisation might lead to a relevant workforce rationalisation and it is currently leading to its demilitarisation. Not only that, Madry (2015) stressed that the key to the response is the structure of the disaster response officials.

According to Ren et al. (2008), organisations operating in high-risk work environments are complex and dynamic, notably because they rely on collaboration among multiple groups of professionals to be successful and reliable. LeClerc (2015) noted that response will not be successful if the communication and organisation structures set up prior to the disaster are not able to accommodate a variety of factors when coordinating response between multiple agencies. Therefore, successful disaster response might be achieved by conducting good collaboration between all levels of government and non-profit agencies. Based on Comfort and Haase (2006) when an organisational response to the needs of the communities failed

catastrophically, the sociotechnical nature of disaster response appears vividly. Consequently, the organisational system is required to preserve the technical system and cope with the bias, human error, and vulnerabilities that sneak into the management of disaster occasions. In agreement, Comfort and Kapucu (2006) stressed that a coordinated action for extreme events is required among multiple actors across many jurisdictions under conditions of heavy demand, urgent stress, and tight time constraints (Comfort & Kapucu, 2006). UNISDR and UNOCHA (2008) support this view stating that to facilitate an effective response and to avoid confusion, skilful coordination among the wide range of potential stakeholders is critical. An Emergency Operations Centre is also essential to ensure a location for coordination and provide a clear central focal point. According to LeClerc (2015), it is very difficult to coordinate a response between multiple agencies. This is because the initial response is often lacking interagency communication and disjointed. The response will not be successful if the organisation structures and communications are not able to accommodate a variety of factors.

Throughout any disaster response, although collaboration in dynamic and complex environments such as disaster response teams is challenging (Ren et al., 2008), working partnerships are necessary to the immediate response and subsequent recovery (Batho et al., 1999) as well as collaboration between all levels of government and non-profit agencies is also crucial for a successful response (LeClerc, 2015). Ren et al. (2008) stressed that smooth coordination across multiple groups whose cultures, routines, and incentives can conflict, are required to achieve high performance. Chen, Sharman, Rao, et al. (2008) point out that to enable better disaster response coordination, a number of new technologies have emerged in recent years. Further, due to the rising threat of terrorism, a significant reorganisation of the U.S. Government have been encouraged through establishing the Department of Homeland Security. First responders training and public health preparedness measure have a good share from billions of dollars allocated for such measures (McEntire, 2015).

2.8.3.3 Directing Stage

Different scholars deal with this function in different terms, such as leading, directing, etc. In this research, the term directing will be used to identify the third stage of management. Directing can be defined as “the interpersonal aspect of managing by which subordinates are led to understand and contribute effectively and efficiently to the attainment of enterprise objectives” (Koontz & O'donnell, 1955, p. 499). However, Jones and George (2003, p. 11) defined leading as an “Articulating a clear vision and energise and enable organisational members so that they understand the part they play in achieving organisational goals.

Leadership depends on the use of power, influence, vision, persuasion, and communication skills to coordinate the behaviours of individuals and groups so that their activities and efforts are in harmony". In a different way, Dixon (2003, p. 95) defined it as "directing and guiding of employees and subordinates to help them to attain the organisation's objectives with the maximum application of their abilities". Using a narrower concept, Weihrich and Koontz (2005, p. 366) define leading as "the process of influencing people so that they will contribute to organisational and group goals".

In terms of response coordination, Comfort (2002) considered that coordinating response operations to extreme events is an extraordinarily complicated duty for public managers. Shen and Shaw (2004) agree with Comfort's (2002) view stating that is not easy to coordinate the activities in such a complicated system for an effective response. Further, Steigenberger (2016) concluded from empirical studies focusing on decision-makers with a political background that the respective disaster response activity suffered from suboptimal leadership. Therefore, various types of management skills, information, and equipment are required in various stages of disaster response (Comfort et al., 2004). In agreement, Steigenberger (2016) stress that decision-makers in operational disaster response activities must have comprehensive expertise. Moreover, the accomplishment of effective inter-organisational coordination among responding organisations has a substantial effect on the success of disaster response processes (Perry & Lindell, 2003).

2.8.3.4 Controlling Stage

The final stage for management is controlling. Control can be defined as "a regulatory process by which the elements of a system are made more predictable through the establishment of standards in the pursuit of some desired objective or state" (Leifer & Mills, 1996, p. 117). However, Jones and George (2003, p. 11) defined it as an "evaluating how well an organisation is achieving its goals and take action to maintain or improve performance". Whereas Dixon (2003, p. 141) stated that controlling "is the measurement and correction of subordinates' activities and the production processes, to ensure that the enterprise's objectives and plans are being carried out". Koontz and O'donnell (1955, p. 582) and Weihrich and Koontz (2005) agree with this view, stating that, "controlling is the measurement and correction of performance in order to make sure that enterprise objectives and the plans devised to attain them are being accomplished".

Controlling activities are concerned essentially with measuring progress and amending perversions (Cole, 2004). The basic control process involves three steps (Carpenter, Bauer, & Erdogan, 2010; Cole, 2004; Dixon, 2003, p. 141; Koontz & O'donnell, 1955, p. 583):

- To establish standards of performance.
- To measure actual performance against standards.
- To take corrective actions where appropriate.

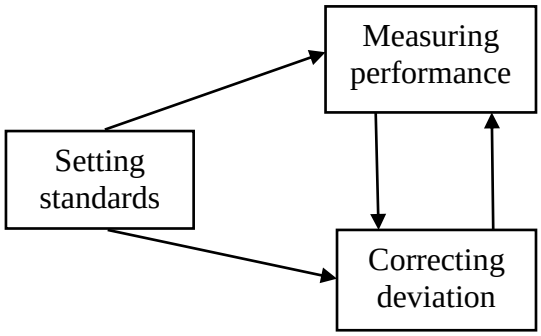


Figure 2.12 The Control Process (Dixon, 2003, p. 141)

In addition to this, Dixon (2003) illustrated the control process in a diagram as shown in Figure 2.12. However, Weihrich and Koontz (2005) point out to the close relationship of planning and controlling as they are like 'Siamese twins' of management, being inseparable (see Figure 2.13).

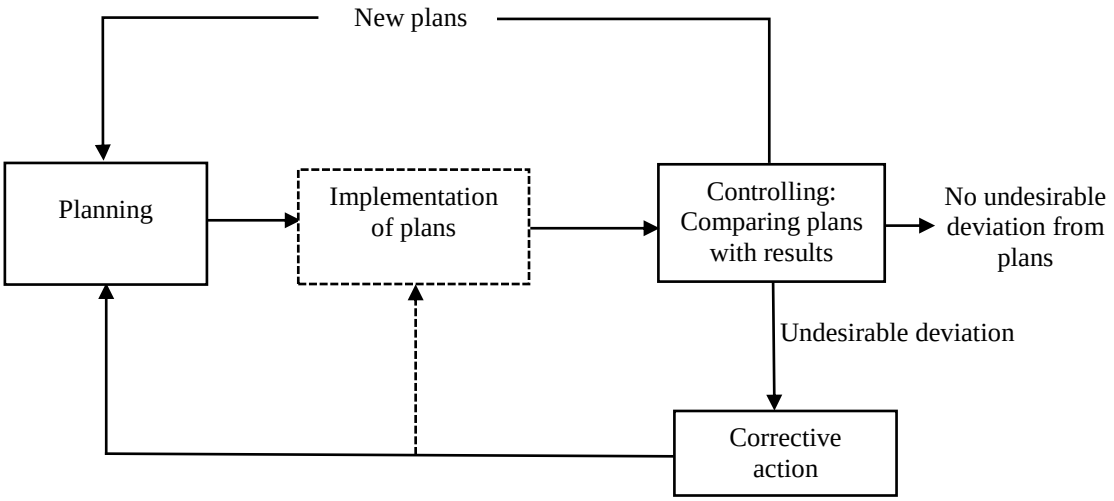


Figure 2.13 Close Relationship of Planning and Controlling (Weihrich & Koontz, 2005, p. 98)

To respond instantly during a disaster, a suitable needs assessment process is required. Accordingly, achieving a suitable evaluation must be performed quickly after the disaster incidence (Ugwu & Ihejirika, 2013). This study intends to provide recommendations to improve the disaster response management stemming from terrorism in Iraq. Therefore, the weaknesses and strengths for further improvement for four stages of disaster response management will be analysed. Having defined the four management stages, different challenges during the disaster response stage have been revealed by exploring the literature as detailed below.

2.9 Challenges during Disaster Response Management

Much research has dealt with disaster response management, however, some of it reveals many challenges facing disaster response management in different aspects and in various countries. In this section, such challenges in different aspects will be discussed.

2.9.1 Planning Stage Challenges

2.9.1.1 Planning Process

The key to effective disaster management is the planning process, from which all related strategies, programs, and arrangements should flow (Emergency Management Australia, 2004). Chen et al. (2006) stated that the planning process is **critical**. Further, planning and training play a crucial role for successful disaster response (Steigenberger, 2016). Additionally, **planning is essential** to being able to take effective and prompt action (McLoughlin, 1985). Current disaster can evolve into a prolonged disaster because of a fragmented and multi-objective nature of disaster planning. Lack of resources, and in some cases of expertise as well as inadequate scenario planning probably hamper the process of disaster planning (Trim, 2004). Moreover, Saeed (2012) noted that the plans of the organisations can be challenged by the **unexpected events and dimensions of the disaster**. Further, Perry and Lindell (2003) pointed out that continuing terrorist attacks worldwide are likely to enhance attention to disaster response planning, especially in Western democracies. Whilst, Schneider (1992) emphasises that the dependence upon the extent to which post-disaster human behaviour corresponds to prior governmental expectations and planning is the key to a successful governmental response. Therefore, Goodyear (2009) stresses the need to establish a disaster management system within the Government of Iraq for appropriate response and preparedness planning to human-made disasters and natural disasters.

There is a critical debate about the usefulness of plans for disaster response management and organisational preparedness more generally (Steigenberger, 2016). According to Uhr et al. (2008), both the literature and empirical findings indicate that sometimes **response operations diverge from existing plans** when adapting to an event and its consequences. Likewise, the response to the attack in Sweden collapsed in 2005 as it did not follow fixed plans or procedures which are criticised by an officer who participated in the response operation. While in Britain, one of the problems of disaster planning is that goals set by central government may not appeal to those responsible for their implementation (Handmer & Parker, 1991). In the same context, although hundreds of hours were put into planning development, many organisations fall prey to numerous unexpected problem areas along the way. Often, the plan is ineffective or worse yet, improperly executed (Barenbaum, N.D.). In agreement, one of the disaster response practitioners criticised the fact that the response did not follow fixed procedures or plans (Uhr et al., 2008). This might because of poor understanding of the response plan, which is one of the different recurring problems that are plague response to disasters (Desforges & Waeckerle, 1991). However, Saeed (2012, pp. 3-4) attributed that to the dynamic situation in a disaster. As a result, new activities (which have not occurred before) may be required apart from those already planned. So the system should allow for **ad-hoc creation of activities and dependencies** by the command centre or the field teams. Saeed (2012) added that **new plans** have to be made and incorporated with old plans and plans of other organisations. Based on the magnitude of the disaster, one organisation might **establish more than one command centre**. There can be one or more field teams controlled by a command centre. Within the same context, Banipal (2006) noted that **dependence on the central dispatch centre** was considered one of the major operational problems experienced during hurricane Katrina. Banipal (2006) explained that due to being highly dependent on the central dispatch centre to coordinate emergency response, it is not only prone to human error but also to the events that can influence the command centre including disruption of power, floodwater damage to the building and wind damage to communication antennas, leaving the field officers on their own as it happened in New Orleans.

In the context of creating plans for terrorist incidents, an inter-organisational testing process is complex because it includes varieties of organisations that might not normally deal with one another (Perry & Lindell, 2003). Uhr et al. (2008) added that despite the fact that a complex and dynamic environment might need certain flexibility in organisation plans and procedures, too little attention appears in planning processes and in bureaucratic structures.

In the US, two problems have arisen. Firstly, **the assertion on the existence of a plan as a document rather than an assertion on the planning procedure** brings positive outcomes for the threat. Secondly, the literature on planning for technological and natural disasters has **a general lack of awareness** in terms of policy actors, elected officials and law-enforcement officials who guide much of the terrorism plan creation (Jenkins, 2001; Smithson & Levy, 2000) cited in (Perry & Lindell, 2003, p. 336). Whereas, an important issue in disaster response in Australia is competition and conflict over responsibilities (Handmer & Parker, 1991). However in Taiwan, Chen et al. (2006) found a phenomenon that is very analogous to the findings of Lindell, Whitney, Futch, and Clause (1996) and Lindell and Perry (2001) that **lacking full-time staff support had a significant impact on the effectiveness of the Local Emergency Planning committees in the US**. Moreover, the planning process **doesn't include other organisations,** let alone community contribution. Many supporting organisations don't even know what their jobs in the disaster management technique are. Lindell et al. (1996) and Lindell and Perry (2001) had analogous findings on this matter in the US. In Iraq, Goodyear (2009) stated that there is absence of the paradigm shift in disaster management thinking in Iraq. Goodyear (2009), within this context, criticised the reactive disaster response operational mechanisms. In agreement, (Money & Harrald, 1995) highlighted the problems of 'create-review-revise planning' since plans are not reality, they are like models when the disaster occurs, there may not be an exact match to that of the plan. Money and Harrald (1995) also state that it is difficult to build consensus among experts about what the plan should look like.

2.9.1.2 Financial Resources

Disaster response planning comprises the allocation of resources, especially budget and personnel. Budget allocation should be commensurate with the role of every department within its jurisdiction. According to Rudman, Clarke, and Metzl (2003, pp. 1-3), America's emergency preparedness efforts are hampered by some obstacles. Funding for emergency responders that was stalled and side-tracked is considered a major obstacle due to:

a) The **slow distribution of funds** by federal agencies.
b) A politicised appropriations process.
c) Bureaucratic red tape at all levels of government.

Equally, in Taiwan, local government **did not have enough budgets to perform** all four phases of disaster management (Chen et al., 2006). While in Turkey, **strong financial resources** are needed to agencies responsible for DRR (Disaster Risk Reduction) activities. Such **resources become inadequate** when distributed among several units (Baris, 2009).Whilst in Europe,

funding is fragmented because fragmentation phenomenon appeared, in the prevention of risk caused by natural hazards, between spatial planning and civil protection (Greiving, Fleischhauer, & Wanczura, 2006) cited in (Greiving et al., 2012). Despite the fact that many vulnerable countries have created permanent funds for robust disaster response activities, Iraq's draft National Disaster Risk Reduction Law does not assign specific funding for disaster risk reduction at national and sub-national levels. Such activities are as an alternative financed using estimated allocations in the national budgets, in addition to donations and grants. Nor does it create any permanent fund for supporting disaster risk reduction at national and regional governorate level (Humayun & Al-Abyadh, 2014).

2.9.1.3 Management Framework, Program and Factors, and Supporting Ordinances

Power allocation is considered one of the important components of disaster planning. To ensure an integrated response, every organisation within the jurisdiction needs to recognise its role when the disaster occurs to avoid conflicts. Beginning with disaster response management framework and factors, according to Baker and Refsgaard (2007), an **adoption of new frameworks was required** to make institutional development in disaster response. Whilst, Baris (2009) explained that weak awareness and lack of action of population and institutions results from a **lack of knowledge of modern disaster risk factors**. Similar to Rudman et al. (2003) who stated that due to **the lack of preparedness standards**, it is impossible to recognise exactly what is required and how much it will cost. Pelling et al. (2004) added that **devising the tools required for policy makers** are considered one of the challenges for integration to make transparent justifications for development policy and the better operations for disaster. Regarding disaster response **program integration**, Unlu, Kapucu, and Sahin (2010) claim that the **success of multi-task response actions relies on the disaster and crisis management integration of programs** prepared in diverse disciplines and organisation of a generated cooperation. Chen et al. (2006), on the other hand, shed light on **the development of supporting ordinances and regulations at different government levels** that are needed for the operation of the disaster management system in Taiwan. Whereas in Iraq, according to Humayun and Al-Abyadh (2014), the current institutional and legislative system is excessively complex. Institutions and laws have overlapping jurisdictions and DRR-related functions are located in different ministries. Such overlapping and conflicting mandates can contribute to a fragmented response capacity. Despite the fact that an efficient and effective response to disasters needs a national perspective, there is no institution which can accomplish a

coordination role to ensure an integrated response from government departments and agencies working under multiple DRR related resolutions, regulations and laws. As a result, there is a need to better integrate responsibilities. Humayun and Al-Abyadh (2014) also noted that Iraq has traditionally followed a relief and response-oriented approach to disaster risk management, as is evident from the review of legislation, and makes only partial reference to preparedness. Humayun and Al-Abyadh (2014) further criticise the restrictive scope of the existing institutional arrangements at national, regional, governorate and district levels, which is focused mainly on post-disaster conditions. Furthermore, the capacity of line agencies to be involved in disaster response is narrowly concentrated on disasters related to natural hazards and does not cover the whole spectrum of disaster situations.

2.9.1.4 Education on Disaster Risk

In disaster situations, education is an integral part of the planning and provision of the humanitarian response, as lives can be sustained and saved by providing quality education. Such education can give physical, psychosocial and cognitive protection to learners. Further, education and training are accepted as cornerstones of an effective disaster response, (May et al., 2015). According to Baris (2009), despite the **education about disaster risk** is offered in primary and high schools in Turkey, there is **no organised educational program for the general public**. There was no consideration for developing standards for community organisations and public education, reaching the public at active, large participation, **producing training materials** and **training the trainers**. Goodyear (2009) stresses that capacity development is the main ingredient of strengthening public-level preparedness. All levels of the preparedness and response system need skilled people in disaster management with an obvious understanding of their role within that system. Such capacity development should not only comprise public members but should produce learning and dialogue between all actors that form part of the disaster management system. However, Harding (2007) concluded that **social development strategies and human rights principles should be promoted** by professionals through political practice and within social work education to face human-made disasters. As a result, **social work would be given a central role in avoiding human-made disaster** and in reconstruction and development following disaster.

2.9.2 Organising Stage Challenges

2.9.2.1 Coordination Problems

Effective coordination is an essential element for disaster response management. Thus far, the available literature related to coordination of disaster response considered this area is important because typical requirements are demanding during an emergency situation, for instance, the risk of possible mass casualty, high necessity and uncertainty for rapid decision making, sudden and unexpected events, large-scale impact and damage, response under resource and temporal constraints and the disruption of infrastructure support necessary for coordination like telecommunications, electricity, and transportation. Therefore, this area is challenging and needs to be studied in greater detail (Chen, Sharman, Rao, et al., 2008). A large and growing body of literature has investigated challenges during the **coordination stage**. One of these studies is from Meissner et al. (2002) which revealed that in order to save lives and property, **disaster response and recovery efforts require coordination and timely interaction** of public emergency services. Based on Lettieri et al. (2009) wrong coordination might cause conflicts to result and waste time. Ultimately, it might cause human and property losses. This coordination includes efficient labour delegation and division (Lettieri et al., 2009). In addition, According to Chen, Sharman, Rao, et al. (2008), the issue of coordination in the context of emergency response is an understudied topic. It is considered an important problem, as it impacts on life and property in the affected area. In a similar way, Unlu et al. (2010) describe coordination and management of first-response operations during crises as problematic and ineffective. Particularly, the Turkish system is not designed for different types of crises such as terrorist attacks. While also in Turkey, **organisational and institutional problems were found** in organising a suitable disaster management and response system (Baris, 2009). Yet, a lack of direct coordination among first responders is considered one of the major operational problems experienced during hurricane Katrina (Banipal, 2006). In the Philippines, systemic breakdowns in communication, damaged infrastructure and limited coordination have occurred in disaster management performance by the Philippine government response agencies when implementing response and relief activities. Such breakdowns caused failures in disaster management performance (Saban, 2014). However in the United States, it is widely believed that the organisational response was typically **deviant and chaotic** and is unproductive in defeating the long-term goals of the terrorists, though, in Turkey, the institutional organisation for disaster management and planning has a **chaotic nature**, namely the responsibilities and duties of some of the institutions often **cause confusion** (Baris, 2009). Uhr, Johansson, and Fredholm (2008)

indicated that the complexity of the response operation likely resulted from the unclear and confused distribution of authority in the disaster response. In agreement, Chen, Sharman, Rao, et al. (2008) indicated that coordination of disaster response is complicated by factors such as multi-authority and massive personal involvement; infrastructure interdependencies; high demand for timely information; and the conflict of interest. Whereas, George et al. (2010) attributed such complexity to the disconnected nature of disaster response activities and manpower-intensive problems. In the United States, a recent study of disaster managers supports the desirability of the "coordination" rather than the "control" approach. The disaster manager, in many cases, acts as a facilitator rather than a commander. Therefore, the absence of a coordinator with sufficient authority to coordinate powerful federal agencies appears as a problem in the United States (Handmer & Parker, 1991). Furthermore, the International Risk Governance Council (2009) cited in Greiving et al. (2012) pointed out **problems related to organisational capacities for responding to or monitoring risk as major deficits of current risk governance**. Hills (1994) summarised that in the disaster response, ideas concerning coordination are confused, partially because coordination by planning is not clearly distinguished from coordination by feedback. As the latter is in accord with past practice, in the UK's emergency response, coordination by feedback will continue to be an important issue.

2.9.2.2 Coordination between Organisations

Disasters often occur without warning and surprisingly, therefore there is no time for long negotiations or prearrangements for different actors such as public and non-profit organisations. Since such organisations might have little experience in doing disaster management activities under extreme circumstances, different problems can emerge from such fragmented performance such as lack of coordination, information exchange, and trust (Comfort, 2007; Nolte & Boenigk, 2013). In addition to that, because national governments' capacities to respond are highly overwhelmed during extreme events, the coordination and joint response resources mobilisation of the global disaster management community is demanded by governments. Such coordination is outside their hierarchical control (Saban, 2014). Accordingly, the inter-organisational collaboration remains one of the main challenges in disaster management literature (Comfort & Kapucu, 2006). Achieving coordinated action among a different group of actors depends basically on their access to timely, valid information and their ability to participate in information search, absorption, exchange, and adaptation (Comfort, 2002). As pre-existing strains between organisations may be exacerbated in disaster response situation (Koehler, Kress, & Miller, 2014), disaster operations are affected by the

degree of coordination developed among agents involved in disaster response (Comfort et al., 2004). According to Saeed (2012) the main problem in disaster response management which lies at the **coordination and collaboration of activities of different organisations** involved both at the inter- and intra-organisation level. Baris (2009) argues that the impacts of disasters are **dramatically exacerbated due to the absence of a single organisational structure** focused on disaster management. Within the same context, Greiving et al. (2012) stated that due to a **lack of coordination between involved actors**; current management of disaster risks is often **fragmented**. Such fragmentation of responsibilities should be regarded during any coordination of activities. Greiving et al. (2012) called this phenomenon as the **"problem of interplay"** which is defined as a result of the presence of a multitude of actors. Steigenberger (2016) gave a reason for such complex coordination problems as these agencies seldom interact in their daily operations. Helbing et al. (2006) added that it is hard to coordinate different organisations and many people that have not collaborated before and do not know each others' command structures. So cooperation of this agencies is required at disaster response operations (Steigenberger, 2016). The UNISDR and UNOCHA (2008) added that assistance during disaster is provided from the wide range of potential stakeholders, such as the military, NGOs, utility companies and private sector entities and skilful coordination among them is critical to avoid confusion and to facilitate an effective response. The Emergency Operations Centre, for instance, is also essential to ensure a clear central focal point and location for coordination. In Iraq, based on Humayun and Al-Abyadh (2014) there is no coordinating body or focal agency to ensure an integrated response by the multiple agencies working on Disaster Risk Reduction. LeClerc (2015) stressed that response will not be successful if the communication and organisation structures set up prior to the disaster are not able to accommodate a variety of factors when coordinating response between multiple agencies. Therefore, to achieve an effective response to disaster, cooperation among all levels of government is required (Kamel & Wachs, 1996). Interestingly, Comfort et al. (2004) find that the relation between the efficiency of disaster response operations and the number of jurisdictions involved is positive. Such a finding is contradictory to the general observation from practice that when the number of jurisdictions involved in response operations increases, the efficiency will drop.

2.9.2.3 Coordination between the Donor Countries and the End Beneficiaries

In Pakistan, as regards the coordination between the donor countries and the end beneficiaries, coordination problems existed during Pakistan's 2005 earthquake (Ugwu & Ihejirika, 2013), While in the South-east Asian region, disaster relief agencies face a number of key **challenges**

that limit their capacity to respond effectively to disasters. Poor coordination between relief agencies and the local government has resulted (Lai et al., 2009) from the **lack of support** from the government of the country struck by disaster. Such lack of support is considered **the main stumbling block that hampers disaster relief operations** (Rowlands, Tan, & Yuen, 2007). On the other hand, Fisher (2007) stated that **the right to deny relief agencies access to disaster-struck country territories has been retained by the government of the disaster-struck country** through the primary phase of a disaster relief operation, particularly if the influenced areas are replete with conflict. Relief agencies, in such a situation, **have little recourse to international legal preparations** to obtain primacy entrance to disaster areas or oblige the government to accept help.

2.9.2.4 Bureaucracies and Cronyism

It is often argued that the prototypical bureaucratic response of delegated authority and use of formal routines have a dampening effect upon policymakers' demands while also slowing organisational responses (May, Workman, & Jones, 2008). In the case of the United States, **a "gap" happens between the emergent norms that direct social interactions and the bureaucratic norms** that dominate governmental activity. It is widely believed that there is a failure in the relief effort when this gap is large, but when the gap is small the relief effort progresses smoothly, and governmental operations are perceived to be successful (Schneider, 1992). For example, in the case of hurricane Katrina, it was claimed (Boin, Hart, McConnell, & Preston, 2010) that because of cronyism in the White House (in Bush's administration) there were appointments that were made (such as FEMA director Brown and Homeland Security Secretary Chertoff) which were given due to loyalty rather than expertise (appointees were not qualified for the roles), and ultimately this affected the efficiency of the disaster response. In agreement, Handmer and Parker (1991) stress that the initiative of operational sections can be constrained because of the tendency for bureaucracies to exert strong central control.

2.9.2.5 Hierarchy and Centralisation Problems

One of the important tasks for organising is assigning groups of essential activities (to achieve response objectives) to a competent manager with authority necessary to supervise it. Within the context of **hierarchy problems**, Baris (2009) believed that the abundance of too many units may cause sometimes hierarchy problems when responding. However, Meissner et al. (2002) noted that there is a need for both intra and inter organisation coordination at several hierarchy levels in order to react not only individually and efficiently, but also in a coordinated manner.

Based on Perrow (1984, p. 334) cited in Handmer and Parker (1991) since the 1960s, organisational theorists have "recognised that centralisation is appropriate for organisations with routine tasks, and decentralisation for those with non-routine tasks". Different scholars stressed the importance of decentralisation during disaster. For instance, Kapucu and Garayev (2011) put emphasis on non-traditional approaches and tools characterised by non-hierarchical structures and flexibility in decision-making. Kapucu and Garayev (2011) stated that because of the ineffectiveness of the traditional disaster management tools, the traditional approaches characterised by hierarchy and centralisation have been replaced by decentralised emergency management systems. Nazarov (2011) and UNISDR and UNOCHA (2008) confirm this view, while Withanaarachchi and Setunge (2014) stressed that decision-making must be flexible during unexpected incidents. Whereas, Steigenberger (2016) stress that an effective disaster response plan outlines roles and responsibilities and prescribes a command structure that is as decentralised as necessary and as centralised as possible.

Baris (2009) noted that the disaster risk reduction system of Turkey is **still mainly centralised**. However, Unlu et al. (2010) point out that **centralised and decentralised systems** have various tasks in various conditions. Despite the **centralised organisation of the Turkish Crisis Management System** that provides the government more coordination and control over resource distribution, **involvement responsibility with various ministries and national organisations generates a coordination problem** (Unlu et al., 2010). Manoj and Baker (2007) added that in disaster response, organisational challenges are prevalent, particularly when groups that are accustomed to hierarchy and hierarchical (centralised) decision making must rapidly work in a more dynamic, flatter, ad-hoc organisation that appears during post-disaster relief efforts. Nevertheless, Smirnov, Levashova, Pashkin, Shilov, and Komarova (2007) emphasise the decision that had been made about future research **to concentrate on decentralisation of the decision support system evolution**. Smirnov et al. (2007) added that such choice can be accomplished through presenting of self-organising networks. Goodyear (2009) supports this view stating that "systems that are community-based can sometimes be more effective than top-down centralised systems because they can be more directly integrated into local response and risk reduction strategies".

2.9.2.6 Trust

It is widely acknowledged that cooperation without initial trust is very difficult to implement because trust boosts cooperation. Once trust has been violated, cooperation is diminished significantly (Krackhardt & Stern, 1988). Steigenberger (2016) describes trust as a precondition

for effective coordination. It is also an important issue in the field of coordination and control. According to Trim (2004), to facilitate cooperation and communication between different actors involved, it is necessary to establish trustworthy and respectful relationships between such actors. In agreement, Emanuele, Cristina, and Giovanni (2009) stressed that in a stressful and potentially harmful environment, there is little chance for a participatory approach between employees and their superiors. Accordingly, trust is the best way to diminish the chance that responders would disobey superiors' orders and compromise operations outcomes.

2.9.3 Directing Stage Challenges

2.9.3.1 Scale or size of the disaster

Different scholars such as George et al. (2010), Kamel and Wachs (1996), and Koehler et al. (2014) agreed that there are specific circumstances surrounding the particular disaster, which influence the effectiveness of disaster response, namely, magnitude, location, and time of occurrence that are unpredictable. According to Baker and Refsgaard (2007), one of the most challenging aspects facing the disaster response institutions is the lack of knowledge of the scale of the disaster until after the damaging incident has happened. Therefore, the scale or size of the disaster should be determined and a response strategy should be developed and implemented to the plan by institutions operating in the emergency response arena. George et al. (2010) agree with the aforementioned view and noted that scale and standardisation of disaster are often one of the major factors that challenge disaster response management and make it complex. Likewise, the magnitude of the incident, the duration or time-scale of the event is also a critical component in assessing the extent of a disaster. Accordingly, a number of actions can be taken to reduce damage if the scale of the disaster is accurately estimated prior to its impact (Baker & Refsgaard, 2007). Moreover, there are different factors used to measure the initial magnitude of disaster such as geographic location, physical severity, and preparedness for disaster. In uncertain conditions, a preliminary effort to assess the initial magnitude of disaster is necessary. Such assessment might be revised repeatedly as more precise information becomes obtainable (Comfort et al., 2004). Comfort et al. (2004) stress that the demand and capacity flow is influenced by the spatial size of the disaster area. Therefore, more time for recovery will be required if the disaster affects an extensive geographical area (Comfort et al., 2004). According to Humayun and Al-Abyadh (2014), to launch an appropriate and timely response to disaster situations, the development of a classification system of disasters and procedures for announcing a state of emergency are of vital importance. Since the

classification system assists to identify the level and nature of response required for a specific situation.

2.9.3.2 Communication

According to Jones and George (2003, p. 11), "Leadership depends on the use of power, influence, vision, persuasion, and communication skills to coordinate the behaviours of individuals and groups so that their activities and efforts are in harmony". In larger disasters, disaster responders face a huge challenge which is a lack of communications infrastructure. Not only that, degraded communications also have a large impact on response in addition to escalating demands of victims which exhausts the remaining capacity (George et al., 2010). Comfort et al. (2004) stress that if the telephone lines are damaged, communication fails. Comfort et al. (2004) clarify that the system will be overloaded by an unexpected increase in the number of connections resulting from many people simultaneously switching their communication means from land telephone lines to wireless or cellular, which in turn make mobile phones not work. During the 2005 Katrina flood, **failures in communication** are considered one of the shortcomings in the federal emergency response (Baker & Refsgaard, 2007). However, Banipal (2006) found that the inter-operability issue was a major operational problem experienced during hurricane Katrina. Because the **existing system was not scalable enough to support hundreds of additional users**, the out of state volunteers were unable to use it. Further, Comfort (2007) stress that the capacity for coordination, among multiple actors, depends on effective communication. Comfort (2007) stated that "if the communication processes do not elicit sufficient shared understanding among the parties to align their priorities for action, the likelihood of achieving a common action framework among multiple actors will be seriously diminished". Manoj and Baker (2007) noted that the lack of radio interoperability is a primary challenge in responding to both natural and human-made disasters. As different response actors communicate with radios set to orthogonal frequencies. This makes inter-agency communications very difficult. Consequently, when more local, state, and federal agencies become involved, the problem is compounded. Therefore, Smith (2011) found that communication is needed to establish a collaborative organisation, particularly within network-type organisations. Smith (2011) also found that communicating with the community affected by the disaster is important in terms of transparency regarding response operations. Further, according to GSMA (2012), in countries that have highly centralised or authoritarian regimes, coordination between mobile network operators and governments can be difficult in times of disasters. Consequently, to manage the disaster response processes effectively and efficiently

the support of ICT (Information and Communications Technology) is considered a desirable feature (Saeed, 2012). In addition to that, integration of early warning systems with public alerts, evacuation and disaster response systems across sectors is vital for disaster management (Goodyear, 2009).

2.9.3.3 Information

Effective directing of resources, when responding to terrorist incidents, requires assessing information prior to, during, and after such events. According to Ren et al. (2008), due to sparse empirical studies in the area of sharing and coordinating information, little is known about the challenges and obstacles when it comes to sharing and coordinating information effectively. It is widely believed that effective response to both natural and human-made disasters requires **assessing information prior to, during, and after potentially catastrophic** events as well as **initiating activities** that will lessen their impact upon society (Belardo, Karwan, & Wallace, 1984). Moreover, to create and orchestrate an effective disaster response and recovery effort, obtaining accurate information about the extent, impact, and scope of the disaster is critical (Madry, 2015). Goodyear (2009) supports this view stating that information plays an extremely important role in effective disaster reduction and response. Because the information quality and quantity is highly unpredictable, it is considered one of the challenges facing institutional systems that are in charge to manage disaster response (Baker & Refsgaard, 2007). According to Sinclair, Doyle, Johnston, and Paton (2012), concerning disaster management decision making, due to the fact that poor decisions lead to poor disaster management, more information and practice are desired and needed by local government organisations. George et al. (2010) noted that to respond effectively to disaster, situational awareness in a disaster is critical. As timely delivery of high volumes of accurate data is required by disaster responders to make correct decisions. Accordingly, Ogasawara et al. (2014) stress that, in the case of large, wide-area disasters, gaps in available information probably lead to the problem of delayed decision making. Such an information vacuum in the immediate aftermath of a disaster can cause fatal delays in decisions for the most urgent lifesaving response activities. Sinclair et al. (2012) added another challenge to this context, which is a lack of awareness of the existence of information about decision making or lack of understanding of its relevance to disaster management from some disaster managers. Therefore, according to Goodyear (2009) due to the importance of an efficient disaster risk management information systems, such systems should be effectively linked to local authorities, local early warning systems, and the media to ensure effective use of disaster risk information for public awareness and education, among others. In Iraq, although

the draft National Disaster Risk Reduction Law acknowledges the importance of information and knowledge management, it fails to provide a framework for establishing a dedicated information system (Humayun & Al-Abyadh, 2014).

Further, because the complex, dynamic and unpredictable nature of the environment in which many groups of professionals need to collaborate, sharing and coordinating information is very difficult for such groups, and due to collective decision-making, actions are negatively influenced by poor information sharing and coordination during inter-agency disaster response. Therefore, lack of coordination might lead to a number of possible failures, for example, counter-productive ordering of sequential relief processes, delayed evacuations, and inappropriate allocations of first responder resources which often result in disaster growth and even higher numbers of causalities (Bharosa, Lee, & Janssen, 2010). Ferdinand, O'Brien, O'Keefe, and Jayawickrama (2012) support this view stating that poor information sharing meant there were cases of duplication of activities leading to community division and conflict of interests. Moreover, Bharosa et al. (2010) noted that although the people are aware of the need for information sharing and coordination, they find themselves challenged by a lack of information and system quality. Comfort et al. (2003, 2004) stated that different phases of disaster response require different types of information and management skills. They also presented the common assumption in disaster management, which is "lack of information is the basic factor in limiting the efficiency of response among organisations". Further, the efficiency of response actions can be enhanced by accessing core information as well as coordination throughout the network of responding organisations can be increased because cooperation without information is not adequate to raise response effectiveness (Comfort et al., 2004). Handmer and Parker (1991) added that effective information flow can partially help to overcome a high degree of fragmentation in disaster and hazard management, despite the limited exchange of information in some cases (Handmer & Parker, 1991). Not only that, Comfort (2002) argued that to achieve coordinated action among a different group of actors, timely, valid information should be accessed. In addition, they should be able to involve information absorption search, exchange, search, and adaptation. Accordingly, Madry (2015) stress that the heart of the disaster response effort is represented by the key information that is accurately updated in a timely way.

2.9.3.4 Providing the Relief Supplies

It is often argued that management of resources in disaster situations is difficult (George et al., 2010) because accurate targeting of aid is considered one of the challenges facing institutional

systems that are in charge of managing disaster response (Baker & Refsgaard, 2007). With respect to **providing the right relief supplies for people in need at the right time**, it is considered one of the most **difficult steps in responding to disasters** and emergency situations, as shown in practice. In agreement, Madry (2015) stressed that getting the right resources and people to the right place at the right time is the greatest challenge. It is also the essence of the control and command stages of the disaster response. Fiedrich, Gehbauer, and Rickers (2000) agree with this view stating that finding the best assignment of available resources to affected areas is a hard problem to solve due to the difficulty in processing and assessing all incoming information in an adequate manner. Based on Comfort and Haase (2006) actual performance failure might happen under stress of disaster if the current knowledge of resources and risks is lacking. At the same time sending wrong or too many supplies means losing resources and time (Smirnov et al., 2007). Moreover, a time lag will happen to return response organisations resources to the normal level if they use all of their resources in the beginning stages of a disaster and do not conserve them (Comfort et al., 2004). In addition, **the effective mobilisation of response to extreme events on a large scale is considered one of the least understood problems** in public management. So the knowledge base to support response operations in such an event **needs to be scalable** (Comfort, 2002). Larson et al. (2006) also state that **local first-responder resources are often overwhelmed** by large-scale emergency incidents, such as acts of terrorism, human-caused accidents, and acts of nature. While the **delays in deployment and mistargeting of aid concerned** are considered one of the shortcomings in federal emergency response, precisely by the Federal Emergency Management Agency, FEMA, during the 2005 Katrina flood (Baker & Refsgaard, 2007). Thus, if the nation does not take **immediate steps to better identify and address the urgent needs of disaster responders**, further terrorist incidents could have an even more devastating impact than the September 11 attacks (Rudman et al., 2003). Moreover, to meet the disaster demands, identifying the resources (facilities, personnel, materials and equipment) that are required by disaster response organisations and the demands that a disaster would impose upon those organisations is required for the planning process (Perry & Lindell, 2003). Distribution of resources, on the other hand, also has a problem of coordination. Although organisations might have resources, they may not be distributed efficiently to people who need help (Comfort et al., 2003, 2004). Despite having the contribution of several studies in terms of improving disaster response plans, especially the disaster resources scheduling problem, techniques for supplying optimal strategies for disaster resources to respond efficiently and effectively to disasters is still lacking (Muaafa et al., 2014). According to Fiedrich et al. (2000) time, quantity and quality of the resources are three limiting

factors affecting resource allocation processes. Based on Comfort et al. (2004) the ratio of demand for assistance to capacity to supply resources varies over time in disaster response and recovery operations. Comfort et al. (2004) assume that the demand flowing disaster response activities relies on the initial size of disaster, the degree of cascade effect or interdependence among actual or potential damaged parts, and the capacity flow among the participating organisations based on their initial conditions of knowledge, resources, equipment, and skills.

2.9.3.5 Speed of Response

When examining disaster response, time is one of the essential elements that should be noted and considered (Miller, 2007). To limit damage to people, property and environment, dire consequences, that are typically delivered from complex disaster problems, must be solved in a very short amount of time (Torma-Krajewski & Powers, 2010). Because in the domain of disaster response, minutes of delay can cost lives and property, so **speed is typically essential**. Not only that, the need for quick action is considered one of the challenges facing institutional systems that are in charge of managing disaster response (Baker & Refsgaard, 2007). Nevertheless, speed of response must be balanced with **good planning** and **smart assessment** to avoid actions that are precipitate and probably counterproductive (Lindell et al., 2006). In agreement, Madry (2015) stressed that time is the real enemy when responding to a major disaster. Perry and Lindell (2003) agree with this view by pointing out two important points. Firstly, **quick reactions** based upon wrong hypotheses or inadequate information **can lead to insufficient protective measures**. Secondly, **threat assessment** is critical and **must be performed constantly, even during stages of disaster effect**. Moreover, Banipal (2006) noted that **quick response** to disaster has the potential to significantly reduce total loss. Nonetheless, Quarantelli (1977) has argued that **appropriateness of response is much more crucial than speed**. Perry and Lindell (2003) upheld this view and added quicker response can be achieved by careful planning.

2.9.4 Controlling Stage Challenges

2.9.4.1 Decision Making at the Controlling Stage

It is widely acknowledged that poor decisions lead to poor disaster management (Sinclair et al., 2012). Further, the right decisions at the right time save lives and property (Madry, 2015).Thus efficient and effective decision-making needs to be researched and understood, practised, learned, and effectively implemented during response (Sinclair et al., 2012). Because a disaster requires critical decisions that must be made in difficult circumstances, responding to disaster

is a serious challenge (Platt, 2015). In agreement, Torma-Krajewski and Powers (2010) stress that making decisions is a critical factor of any disaster response and the success of that response is dependent upon effective decisions being made in a timely manner (Torma-Krajewski & Powers, 2010). Decisions can be as complex as responding to a major disaster. Decision making in a disaster is made additional difficult due to stress (Withanaarachchi & Setunge, 2014). Experienced and knowledgeable leaders make right decisions when faced with difficult or unexpected problems (Desforges & Waeckerle, 1991). They reported that one of the repeated problems that hinder response to disasters is **errors in judgment**, particularly those committed early, will be exaggerated quickly as the response proceeds. Decision-makers usually have inaccurate and random information about the resource requirements, scope and timing of the disaster prior to the incident, the development of fast response and efficient disaster relief plans poses itself as a difficult stochastic decision problem (Barbarosoğlu & Arda, 2004). Withanaarachchi and Setunge (2014) stated that the highest ranking officer to the lowest ranking officer who participate in decision making can fail to perform the most significant aspect of decision making during disasters, saving lives. There can be breakdowns in the chain of command in all areas from evacuation planning to communication and sheltering, to transport.

Leadership challenges in disaster management were discussed by Boin and Hart (2003, p. 545). They argued that inaccurate information, media pressure, stress, and organisational chaos, are some of the factors that make it challenging for disaster leaders to make right decisions. There are wide and diverse factors that are influencing the decision-making process and the decision maker. At the group or organisation level some of these factors are cooperation, communication, coordination, and constraints such as information sharing and intelligence, clashes over organisational domains or jurisdictional differences, teamwork and shared mental models, uncertainty, policy ideology, and political and economic priorities. These factors might overlap onto the individual decision maker and can also comprise the knowledge, individual's experience, trust, skills, time pressure, stress risk, overwork, leadership ability, personal priorities, conflict over responsibility, deviance, political goals, and control (Boin & Hart, 2003; Handmer, 2008; Quarantelli, 1997b). Uhr et al. (2008) stated another challenge, which is officers on the incident scene who take directing decisions and initiatives not negotiating or anchoring with other officials, in addition to unclear roles of the various decision makers and organisations participating, along with their responsibilities. Withanaarachchi and Setunge (2014) stressed that a responsible decision maker should have the knowledge about the situation

and be able to carry out a situational analysis; implementation and other related requirements, available resources to carry out the whole process of decision making; able to understand the constraints and available time; team capabilities; and the level of collaboration, experienced staff, and available technology. Withanaarachchi and Setunge (2014) also noted that decision maker at responsible places must get the required guidance and training since it is not easy to find solutions to every disaster. Further, Boin and Hart (2003, p. 545) stated that successful disaster leaders avoid routine policy-making procedures to accelerate decision making in dynamic, complex environments in which the decision maker must remain flexible. Thus, decision-makers in operational disaster response activities must have extensive expertise (Steigenberger, 2016). It is important that people involved in disaster responses have a comprehensive understanding of how decisions should be made, and the factors existing during disasters that can influence the effectiveness of the decisions (Torma-Krajewski & Powers, 2010). In the case of large, wide-area disasters, since circumstances are continually changing, real-time and ongoing decision making is a particular challenge. Fatal delays in decisions for the most urgent lifesaving response activities can happen due to gaps in available information in the immediate aftermath of a disaster (Ogasawara et al., 2014). Steigenberger (2016) concluded that the respective disaster response activity suffers from suboptimal leadership, particularly by decision-makers with a political background.

2.9.4.2 Risk Assessments, Control and Evaluation

In general, to undertake risk assessments in urban areas, different challenges should be taken into account, including: specialised technical skills, financial allocation for risk assessments, data collection and interpretation, the extent to which assessment methodologies represent the actual situation, gaining and maintaining political support (Dickson, Baker, Hoornweg, & Tiwari, 2012). It is often argued that actual performance under stress of disaster is almost certain to fail if current knowledge of risks and resources is lacking (Comfort & Haase, 2006). Similarly, Schipper and Pelling (2006) stress that lack of data on risk, hazard, vulnerability, and disaster losses are barriers in front of disaster response and initiatives are needed to overturn such barriers. In agreement, the UNISDR (2016) noted that risk assessment methods often cite instant challenges in obtaining the necessary data. In Iraq, according to Goodyear (2009), a comprehensive and coordinated disaster management system of risk management was lacking. Such a system includes a risk analysis based on an examination of the first responders charged to assist in times of disasters, capacities of resident populations, vulnerabilities, and hazards.

In terms of control, it is claimed that **sometimes the exercise of power is misused by a small number of privileged managers** (Comfort, 2007), although in very uncertain situations such as an immediate disaster response, the shared goals of protecting lives and property can be maintained through shared knowledge and expertise. Comfort (2007) also states that the focus on the critical points is crucial so as to contain the scale of the disaster; a situation that is articulated in military environments, whereby the soldiers are trained to frame strategies yet use their own judgement to analyse a particular situation.

In addition to assessing the risks before the disaster and controlling operations professionally, it is crucial to evaluate the disaster response so that lessons can be learned. As controlling activities are concerned essentially with measuring progress and amending perversions (Cole, 2004). According to McLoughlin (1985), there are opportunities to improve future responses invariably once a government responds. **Evaluations are critical to such improvements** and **should be conducted** shortly after the incident while memories are still fresh. In the aftermath of disasters, organisational managers are sometimes perceived to have not controlled their resources that are supposedly "initiated, managed and controlled" by organisations. All evaluations and conclusions, whether positive or negative, **should be fed back into the planning process** (Al-Dahash & Kulatunga, 2015). Hofmann et al. (2015) support this view stating that **disaster response management has to include performance analysis**; so that the fulfilment of objectives and goals can be analysed and previous plans from pre-disaster for preparedness can be adjusted so that disaster response can be improved.

By considering the above discussion, the challenges during the disaster response management stage have been categorised into planning, organising, directing, and controlling phases. Figure 2.14 below illustrates the summary of these challenges during the disaster response management stage.

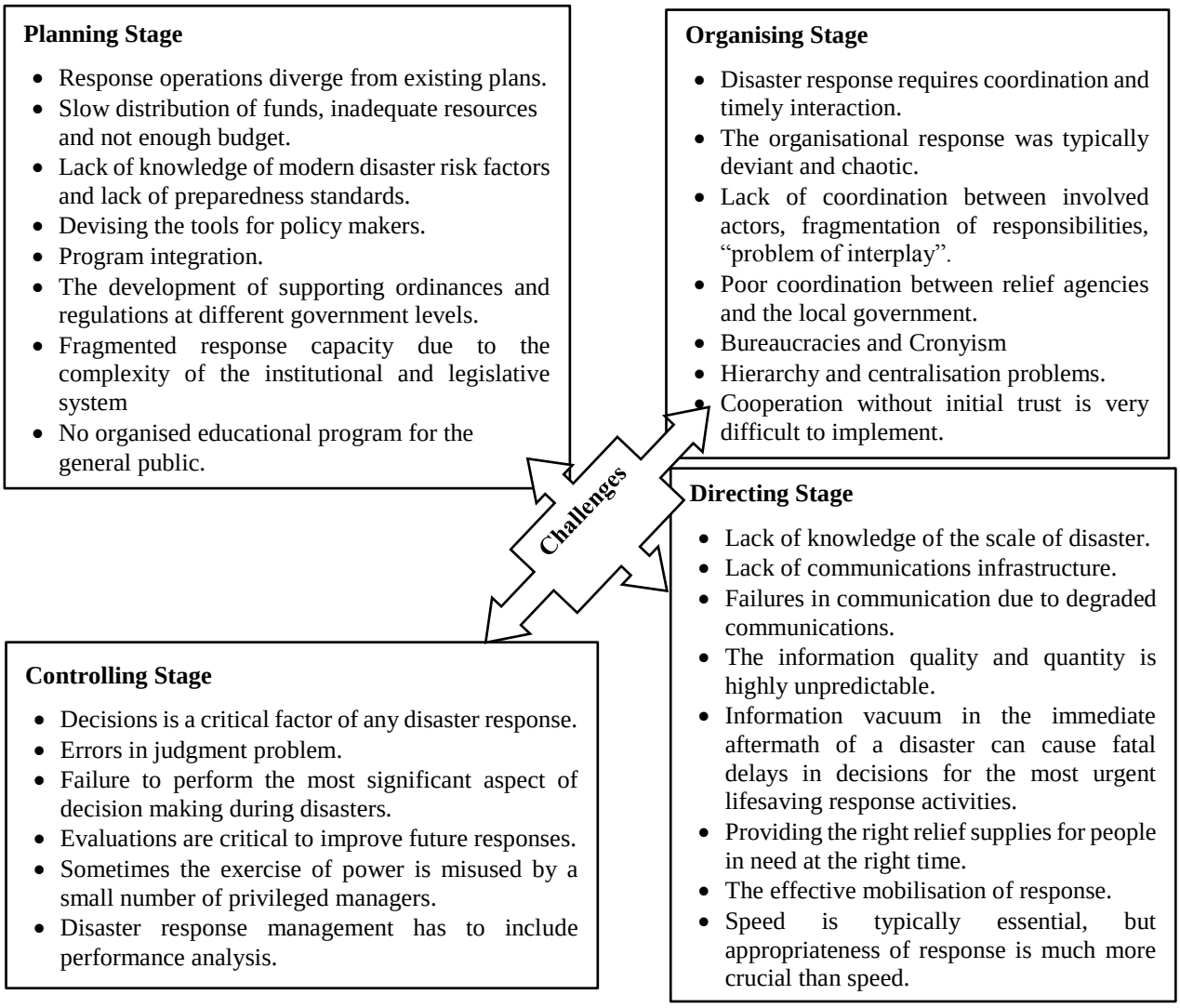


Figure 2.14 Summary of the Challenges during Disaster Response Management stage

2.10 Disaster Response Management Good Practice

To conduct a proper evaluation of the current disaster response practices, a comprehensive literature review was conducted. By reviewing a large amount of global literature, as discussed in the above sections, a number of good practices for disaster response management were identified (see Appendix B). To evaluate each stage of the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling), the identified elements were categorised by these management stages (see Appendix C). The identification of good practice disaster response management factors, will help to identify the overall gaps in every stage of disaster response management in Iraq. Table 2.2 shows the elements of good practice that have been highlighted by the respective authors. This information is categorised into the stages of Disaster Response Management and themes.

Table 2.2 Element of Good Practice Disaster Response Management Categorised by Management Stages

Stage	Theme	Good Practice	Author
Planning	Planning process	- The extent to which emergency plans are rehearsed. - The level of prior planning. - Evacuation plan. - Drawing up organizational disaster plans and integrating them with overall community-mass-emergency plans; and continually updating obsolete materials/strategies. - Systematic disaster and loss inventory. - Housing improvement and human settlement relocation from prone-areas. - Emergency response planning and implementation of warning systems. - Endowment of equipment, tools and infrastructure. - Well-planned emergency relief supply system - Applicable emergency response plan and regulations - Prior planning of logistic centres and shelters - Government unity of leadership to plan and coordinate as a whole - Pre-determined strategies - Updating and enforcement of safety standards and construction codes.	(Henstra, 2010) (Faulkner, 2001) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Fischer, 2005) (Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)
	Financial resources	- Reserve funds for institutional strengthening. - Budget allocation. - Budget mobilization.	(Cardona, 2005; Carreño, Cardona, & Barbat, 2005; Carreño, Cardona, & Barbat, 2007) (Zhou, Huang, & Zhang, 2011)
	Supporting ordinances	- Supportive laws and regulations. - What local jurisdictions may be involved? - Legal procedures for requesting short-term emergency state and federal assistance	(Moe & Pathranarakul, 2006) (Wallace & De Balogh, 1985) (Zhou, Huang, & Zhang, 2011)

		- Applicable emergency response plan and regulations	
	Education on disaster risk	- Involvement, education and review. - Community capabilities audit. - Undertaking public educational activities. - Training and education on risk management. - Community preparedness and training. - Education campaign on disaster prevention and response - Specific training of professionals such as rescue workers and medical staff - Training - Educating the public and others involved in the planning process. - Holding disaster drills, rehearsals and simulations; - Developing techniques for training, knowledge transfer and assessments.	(Faulkner, 2001) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)
Organising	Coordination problems	- Developing overall coordination. - Generating an appropriate delegation of tasks and division of labour. - Volunteer management. - Search and rescue. - Coordination and collaboration. - Organisation and coordination of emergency operations. - Reasonable organizational structure and clear awareness of responsibilities - Regular organization of simulated disaster exercise - Government unity of leadership to plan and coordinate as a whole - The involvement and support of army	(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011)
	"Problem of interplay" coordination between the donor countries and the end beneficiaries	- Protocols. - Formulating memoranda of understanding and mutual aid agreements. - Correctly recognising differences between response and agent-generated demands. - Blending emergent and	(Hughey, 2008; Quarantelli, 1997a, 1997b) (Henstra, 2010) (Faulkner, 2001) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis

		established organisational behaviours. - Community emergency response teams. - Establishing informal linkages between involved groups.	Quarantelli, 1984, pp. 5-24)
	Hierarchy and Centralization problems	- Competencies of managers and team members. - The degree of prior disaster experience.	(Moe & Pathranarakul, 2006) (Fischer, 2005)
		- Implementation of hazard-event control and protection techniques. - Properly exercising decision-making. - Effective consultation with key stakeholders and target beneficiaries. - Clearly defined goals and commitments by key stakeholders. - Flexibility of decision-making.	(Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b)
Directing	Command centre	- Adequately processing information. - Having a well-functioning emergency operations centre. - Effective information management system. - Disaster management command centre. - The detailed status of EOC mobilization. - Key officials need to be briefed. - Non-EOC organisations being mobilized for emergency response. - Convening meetings for the purpose of sharing information. - Hazard monitoring and forecasting. - Strong ability to send out specific early warning about potential hazards. - Clear procedure of reporting and submitting information - Effective emergency information system to ensure information transferring - The scale of the disaster	(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Faulkner, 2001) (Wallace & De Balogh, 1985) (Burling & Hyle, 1997, pp. 234-235; Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)
	Communication	- Providing appropriate reports for the news media. - Emergency public information.	(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b)

		- Effective communication mechanism. - Public information and community participation. - Intra- and inter-organisational behaviours between organisations. - From organisations to the public. - From the public to organisations. - Within systems of organisations. -	(Henstra, 2010) (Moe & Pathranarakul, 2006) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Batho, Williams, & Russell, 1999) (Quarantelli, 1988)
	Speed is essential	- Very short response time to start the emergency plan - Cordon access - Evacuation	(Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)
	Timely provision of the right relief supplies for people in need	- Effectively mobilising personnel and resources. - Emergency shelter arrangements. - Effective logistics management. - Sufficient mobilization and disbursement of resources. - What are our inventories of emergency resources and where are they located? - What emergency evacuation requirements are there and where? - obtaining, positioning and maintaining relevant material resources - Timely and accurate relief needs assessment - The security of relief aids during distribution and transportation - Application of modern logistics technology	(Hughey, 2008; Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Wallace & De Balogh, 1985) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Zhou, Huang, & Zhang, 2011)
Controlling	Evaluations are critical	- Risk assessment. - Damage reporting system. - Hazard evaluation and mapping. - Vulnerability and risk assessment. - Testing of inter institutional response. - Statistics and feedback of loss information - Evaluation on the efficiency and effectiveness of the management system - Continuous improvement of the operational system of emergency management	(Faulkner, 2001) (Wallace & De Balogh, 1985) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011)

2.11 Disasters in Iraq

Iraq is exposed to various forms of natural and human-made disasters, as listed in Table 2.3.

Table 2.3 Natural and Human Induced Vulnerabilities Faced by Iraq (Humayun & Al-Abyadh, N.D., p. 9)

Natural	Human Induced
Earthquakes	IDPs and refugees
Floods	Terrorism/civil unrest
Land Slides	Toxic environmental pollution
Sand Storms	Landmines & Unexploded Ordnance (UXO)
Drought	High-risk structural collapses
Depletion of Natural Resources	Transport and industrial accidents
Health Epidemics	

The country is increasingly susceptible to natural disasters including floods, drought, epidemics, desertification, sandstorms, earthquakes, soil salination of fertile lands, destruction of marshlands, and chemical and industrial hazards (Humayun & Al-Abyadh, 2014).

The effects of war in Iraq are coupled with the susceptibility to natural hazards which has exposed the people of Iraq to multiple human-made disasters. Such disasters have included sulphur dioxide release due to sulphur stockpiles, depleted uranium, industrial and military legacy of contamination and dangerous waste, unexploded ordnance and land mines, military scrap yards, land pollution and dangerous waste by the oil industry, fire, and surface water pollution by oil spills due to sabotage of oil pipelines (Humayun & Al-Abyadh, 2014).

The continuing effects of conflict, displacement and severe poverty have exacerbated the exposure of the Iraqi people to these disasters. Many essential services needed to manage hazards, reduce risks and respond to disasters have been crippled by war and post-war conflicts (Humayun & Al-Abyadh, 2014).

The post-war transitions in Iraq have affected the institutional capacities of the state to respond in an efficient manner. Furthermore, it appears that the lack of a national platform to organise the efforts of multiple institutions at all tiers of government have serious limitations for the current institutional and legislative systems for DRR (Humayun & Al-Abyadh, 2014).

2.12 Statistics about Terrorist Operations in Iraq

2.12.1 Number of Overall Incidents in Iraq Caused by Terrorists

The internal statistics from the Statistics Department / Iraqi Ministry of Interior, shown in Figure 2.15 below, illustrate the number of overall incidents caused by terrorists in Iraq, between 2009 and the first seven months of 2016. The number of incidents was 10500 throughout 2011, and a similar number occurred in 2012. After the fall of Mosul in June 2014 and due to the war against the so-called Islamic State, the number of terrorist attacks increased dramatically to more than 77000 in 2015, and during the first seven months of 2016, this number has already reached more than 60000.

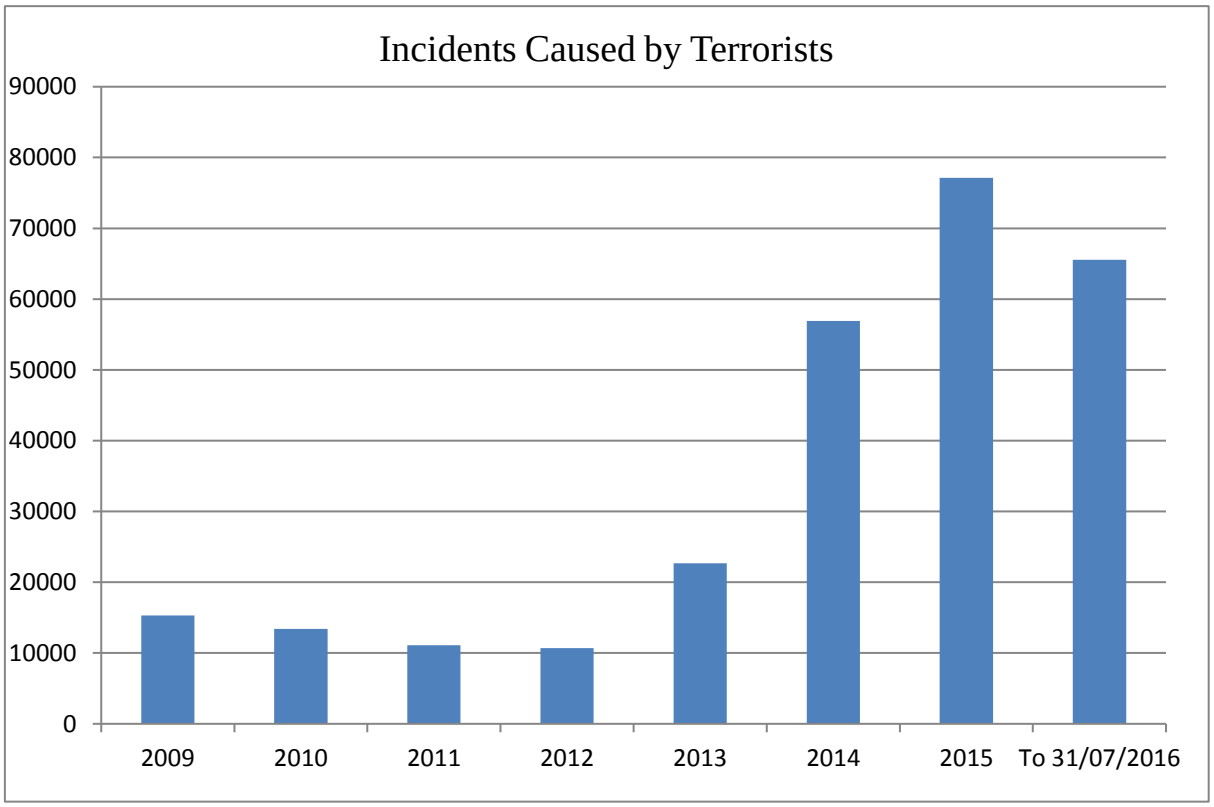


Figure 2.15 Number of Overall Incidents in Iraq Caused by Terrorists, 2009-2016 (Statistic Department, 2016)

2.12.2 Types of Incidents Caused by Terrorists

Terrorist incidents are a key component of this research. Therefore, it is important to analyse the terrorist incidents data in terms of their type, frequency, and lethality. To do so, Figure 2.16

clearly shows the different types of incidents caused by terrorists and their frequency between 2009 and the first seven months of 2016.

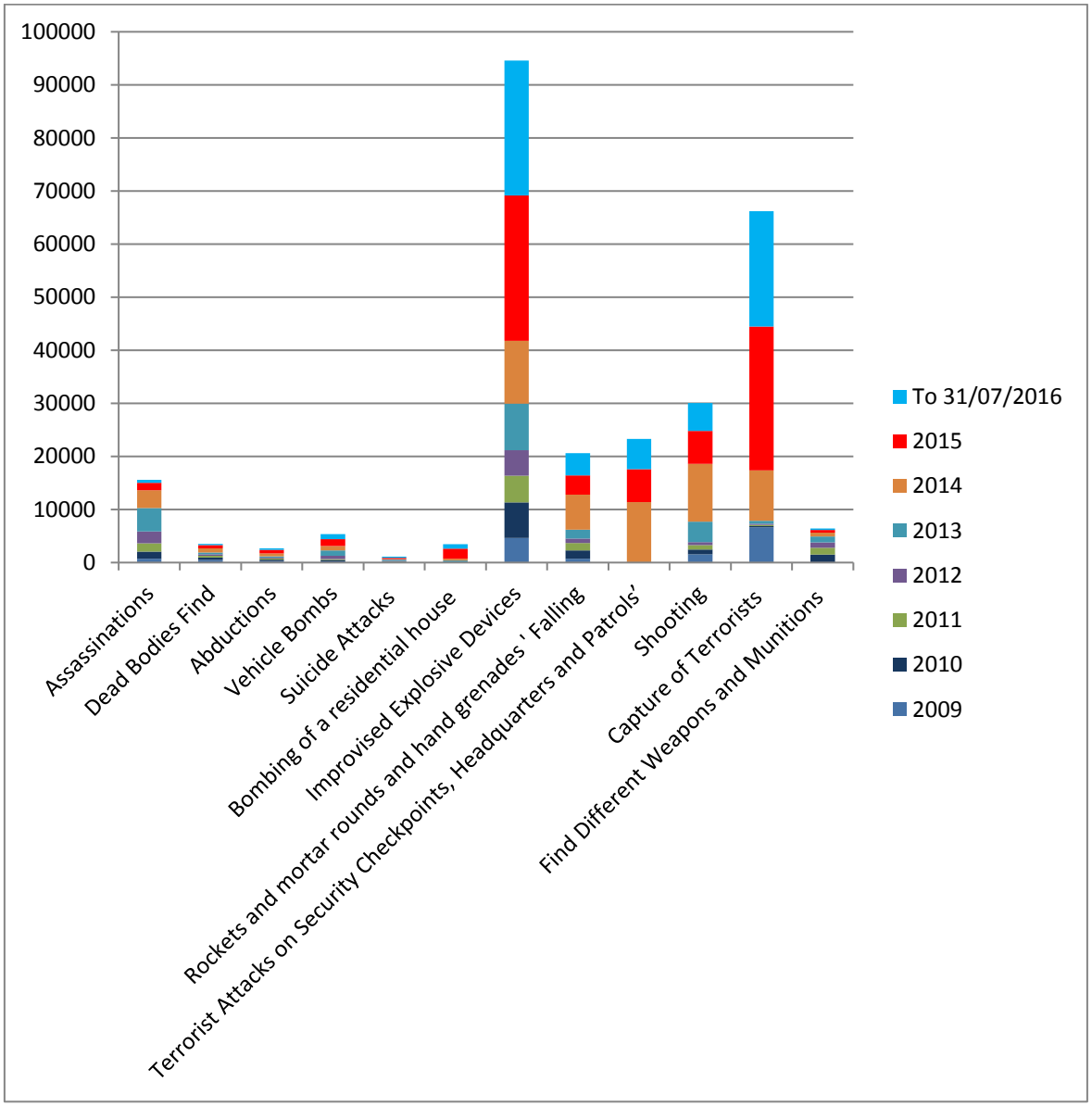


Figure 2.16 Types of Terrorist Operation, 2009-2016 (Statistic Department, 2016)

The most frequent type of terrorist incident is the planting of 'Improvised Explosive Devices', which accounts for more than 90000 incidents. Such incidents vary depending on the different type of device, some are planted in busy areas, some are adhered to vehicles, and some are simply acoustic devices that cause minimal damage but great fear. The next highest number, unsurprisingly, is the capture of terrorists, which may include either killing or injuring the attacker, which has more than 65000 operations. An interesting finding from this statistic is that after 2013 a new type of operation was observed, the 'Bombing of a Residential House' and

'Terrorist Attacks on Security Checkpoints, Headquarters and Patrols'. The emergence of such types of terrorist operation was mostly caused by the preparation by the terrorists to occupy Mosul in June 2014. The least frequent type of terrorist operation was 'Suicide Attacks'. From 2009 to the end of July 2016, 1134 suicide attacks took place in Iraq.

2.12.3 Number of Killed and Injured in Terrorist Operations

Many Iraqi people have been affected by terrorist operations. In this section, statistics about the number of killed and injured will be discussed in order to show one of the challenges facing the employees in the Iraqi General Directorate of Civil Defence in Baghdad and the provinces, while responding to disasters.

According to the statistics from the Planning and Resource Development Department/ Iraqi Ministry of Health, which is shown in Figure 2.17, more than 60000 people were killed and injured in terrorist operations throughout 2006.

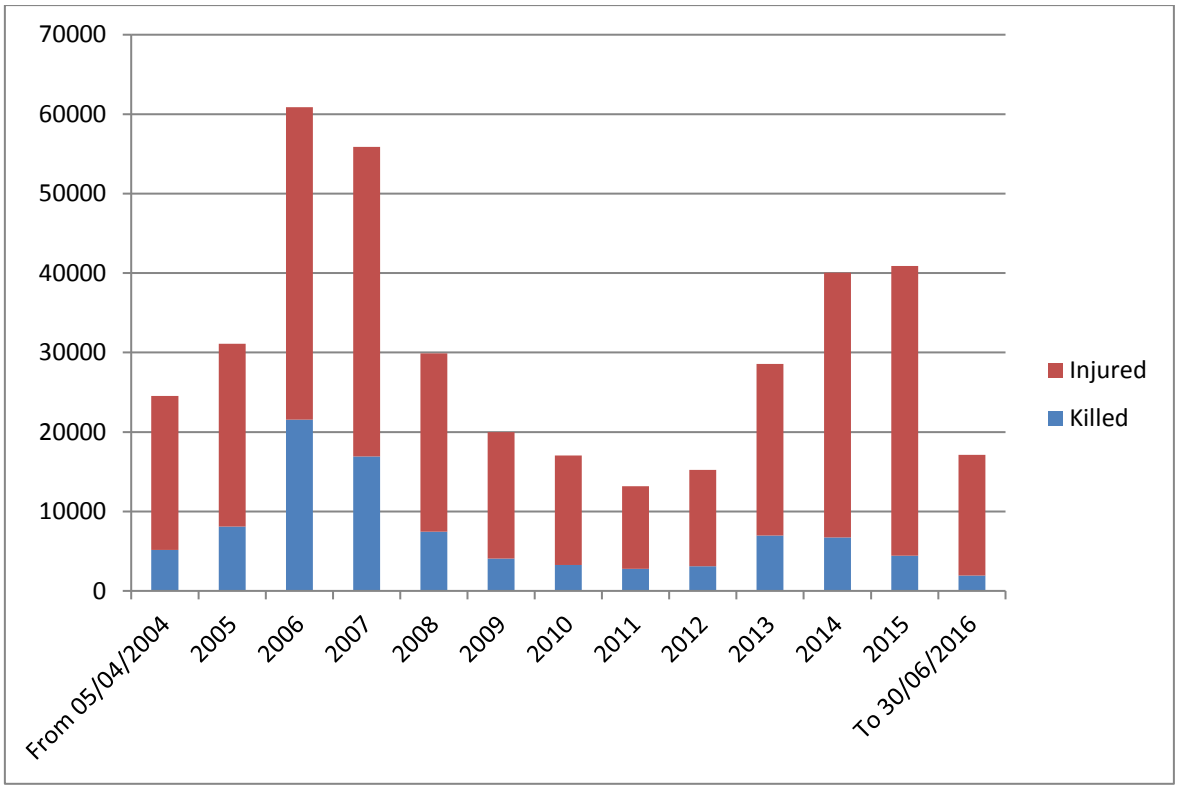


Figure 2.17 Number of Killed and Injured in Terrorist Operations, 2004-2016 (Planning and Resource Development Department, 2004-2016)

The biggest rise was seen in 2006/ 2007 because of the attacks on 22 February 2006 in Samarra on the holy shrines of Ali Al-Hadi and Hassan Al-Askary, which are sacred to the Shia people.

This attack led to a significant increase in tension between Shia and Sunni Muslims in Iraq. Consequently, there was a significant increase in the number of killed and injured in terrorist operations throughout 2006 and 2007 and thereafter. However, this number decreased to 13000 in 2011 which is the least number of killed or injured people compared with other years. This number has also increased to more than 40,000 people that have been killed or injured throughout 2014, 2015 and the first half of 2016, due to the war against the so-called Islamic State, and particularly after the fall of Mosul in June 2014.

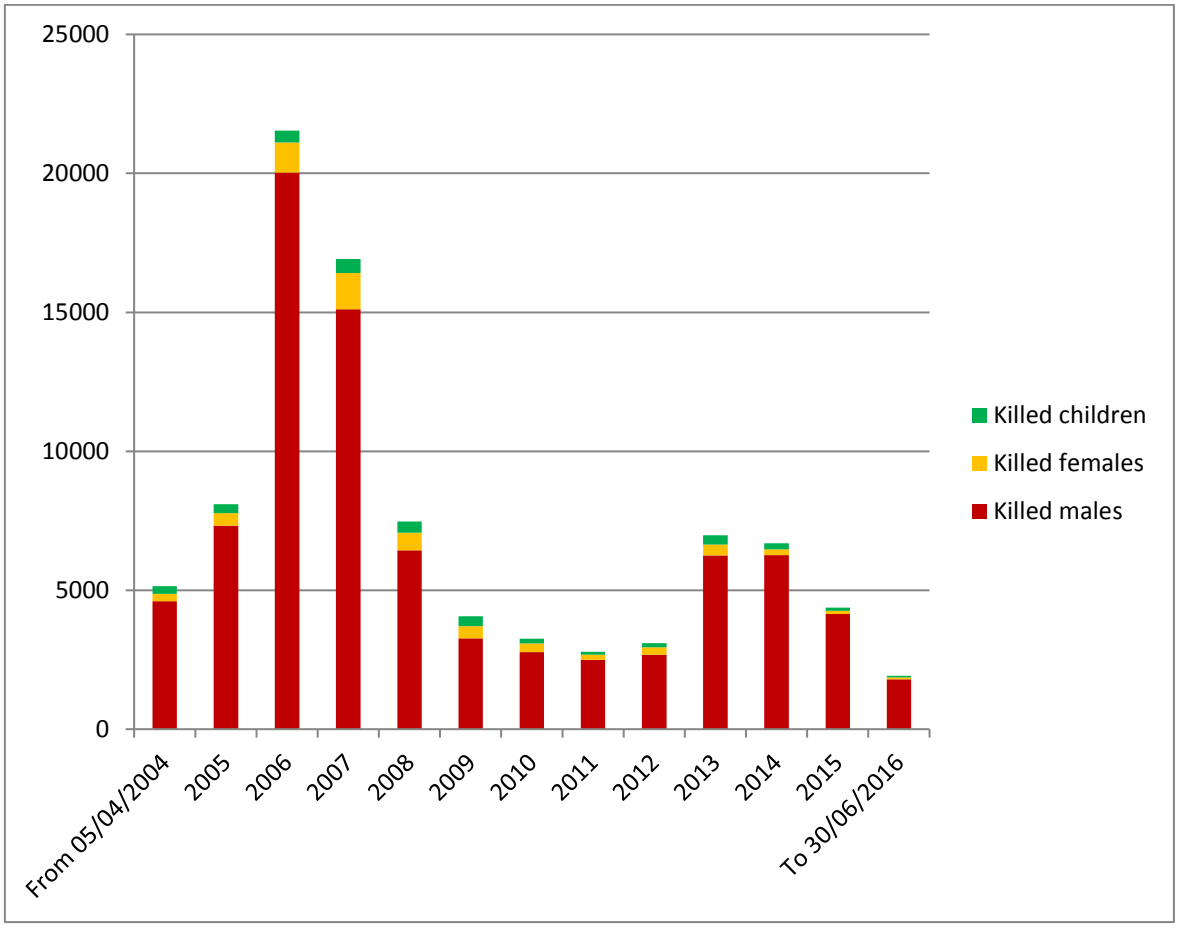


Figure 2.18 Number of Males, Females, and Children Killed in Terrorist Operations, 2004-2016 (Planning and Resource Development Department, 2004-2016)

It can be seen from Figure 2.18 that significantly more males were killed than females. The number of children killed was lower still. Similarly, in Figure 2.19, the number of people injured reflected the same pattern: mostly males, then females and children with the lowest number.

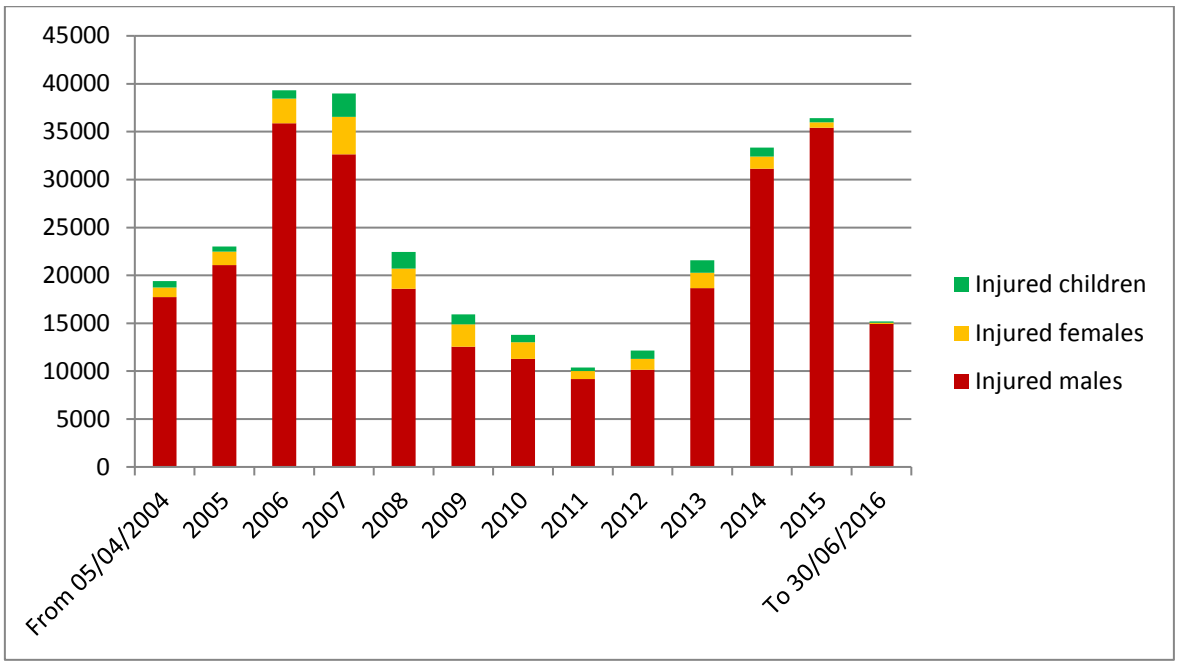


Figure 2.19 Number of Males, Females, and Children Injured in Terrorist Operations, 2004-2016 (Planning and Resource Development Department, 2004-2016)

2.13 Disaster Management in Iraq and Countries Surrounding Iraq

It is widely acknowledged that poor policy and institutional capacities regarding disaster management makes people and communities more prone to the effects of natural and human-made disasters. As humanitarian disasters become more complex, different countries such as Middle Eastern countries including Iraq try to overcome such disasters by enhancing disaster management in this area with research. To have a general idea about these scholars in this area, a literature encompassed disaster management in Iraq and countries surrounding Iraq has been reviewed and is presented below.

2.13.1 Disaster Management in Iraq

It is often seen that there is focus on disasters in developed countries, whereas disasters that occur in developing countries have received scarce attention (Steigenberger, 2016). Further, although extensive research has been carried out on disaster management, no single study exists which adequately covers the problem of disaster response management in Iraq. Only three studies have focussed on disaster management in Iraq (Goodyear, 2009; Harding, 2007; Humayun & Al-Abyadh, 2014). Such studies are unsatisfactory because Goodyear's (2009) study aimed to enhance the understanding of the existing situation of disaster risk reduction (DRR) for the GoI (Government of Iraq), non-governmental organisations, UNAMI (United

Nations Mission) and the wider audience of donor agencies as well as the international disaster risk reduction community. Three purposes have been noted by this study. Firstly, the nature and feature of Iraq's hazards and their risk of becoming a complex emergency was highlighted. Secondly, the current disaster response capacities of key stakeholders in responding to Iraq's natural and human-made hazards were reviewed. Thirdly, practical recommendations for stakeholders were given to be considered in the development of programmes that might participate to support disaster risk reduction at the central, region, governorate and community levels; the priority development strategy as defined in the GoI next Five-Year Plan (2010 – 1014) was also addressed. The study reveals that the primary constraints that impede the disaster response capacity of civil services institutions are **inadequate fiscal resources and manpower as** well as a reservation to align themselves with government systems. However, **limited access to professional equipment and training, individual organisational capacity, and the absence of a central authority entrusted to create a strategic plan** among all stakeholders, including non- governmental organisations and civil society as well significantly contribute to weaken disaster management systems. In addition, **there is requirement to set up a disaster management system within the GoI** for preparedness planning and appropriate response to human-made and natural disasters after the security improvements in 2008 and part of 2009 and the decrease of the foreign disaster response capacity provided by the departure of the Multi-National Forces-Iraq from city centres. It also reveals that **Iraq's institutional disaster management ability is restricted, both on the national and subnational fields**. Moreover, **the lack of the model shift in disaster management thinking in Iraq** has not changed concerning the adoption of an all-risk disaster reduction system to substitute their reactive disaster response operational techniques. The study also sheds light on **the lack of comprehensive and coordinated disaster management system of risk management in Iraq** that comprises a risk analysis based on an inspection of threats and the vulnerabilities and capabilities of inhabitant populations and the first responders charged to support in times of crises. Within the GoI and other disaster risk reduction stakeholders, stronger technical and infrastructural capabilities are needed inevitability to plan for, mitigate and respond to future crises in Iraq (Goodyear, 2009). However, Harding (2007) conducted a case study of a human-made disaster examining the US-led policy towards Iraq after exploring the concept of disaster. The latter argued that Iraq's economic and social development was crippled by war following years of economic sanctions, US military intervention in 1990–1, the Iran–Iraq war and decades of government repression. Due to the continuing violence and social disintegration in Iraq, social work was suggested as a key overall role to play in responding to strategies that create

such disaster. Harding (2007) concluded that social development strategies and human rights principles should be promoted by professionals through political practice and within social work education to face human-made disasters. As a result, social work would be given a central role in avoiding human-made disaster and in reconstruction and development following disaster (Harding, 2007). The study by Humayun and Al-Abyadh (2014) aimed to improve the Disaster Risk Reduction (DRR) legal and institutional arrangements in Iraq by examining the key strengths and gaps in the existing legal and institutional framework for disaster risk reduction. Furthermore, a review of the existing legal framework was provided. It concluded four overarching features. Firstly, human-made calamities such as conflicts, terrorism and industrial hazards have been focused on as a result of the longstanding conflict and wars in Iraq. Secondly, no rigorous effort has been made to institute a comprehensive disaster risk management framework due to a lower frequency of natural disasters in recent years. Thirdly, **the establishment of any comprehensive DRM/R framework which can be operative at all the tiers has been inhibited due to a direct bearing for a transition from war and internal strife to functional governance on DRM/R architecture in Iraq**. Fourthly, there are a number of laws which were enacted prior to 2003 and are directly related to DRM/R such as the Emergency Use Law 1969, Civil Defence Law 1978 and Public Health Law 1981. But these laws have yet to be synchronised with the emerging legal and institutional arrangements in post 2005 Iraq. Such laws do not take account of disaster contingency planning. This means that the development of institutional and legislative systems for DRR has a reactive approach. To sum up, disaster risk reduction (DRR) in Iraq requires effective disaster preparedness and response mechanisms, people-centered early warning systems, responsible enforcement of policies and legislation, careful development planning, scientific knowledge, public understanding, and political and legal commitment, however, it is a complex and crosscutting development issue (Goodyear, 2009). Further, previous studies regarding Iraq's disaster management have not dealt with the response phase in particular. So other studies for countries surrounding Iraq will be reviewed to complete the overall picture on disaster management in this area.

2.13.2 Disaster Management in Countries Surrounding Iraq

Starting with disaster management in **Turkey**, more recent attention has focused on the effectiveness and development of Turkey's Disaster Management System as well as conducting a qualitative evaluation to find the shortcomings and weaknesses of the current system (Baris, 2009; Unlu et al., 2010). Baris (2009) focuses on institutional actors and deal with issues of coordinating disaster management aspects considering the past experiences. The latter

emphasised that in order to obtain a "comprehensive disaster management" the legislations should be reviewed and additional points should be added to existing legislation.

However, Unlu et al. (2010) examine what kinds of initiatives were presented and what is the tendency for change. Alternative approaches and suggestions were included after analysing recent cases and exploring some government initiatives. Baris (2009) concluded that many institutional and organisational problems in organising a suitable disaster management and response system occurred. While the impacts of disasters are dramatically exacerbated due to the lack of a single organisational structure concentrated on disaster management. Whereas, Unlu et al. (2010) concluded that Turkey's disaster management system has developed since 1930, which mostly relied on experiences. A centralised structure governed the disaster and crisis management system. Nevertheless, the system at local level appeared extremely weak. Moreover, at both national and local levels, contribution of non-profit organisations is quite restricted. Consequently, the first-response operations had a problematic and ineffective coordination and management. Specially, different types of crises such as terrorist attacks are not considered in the design of the existing system. Unlu et al. (2010) added a more integrated and flexible structure to cope with current problems effectively is needed in Turkey's crisis management.

However, in **Iran**, Jahangiri, Izadkhah, and Tabibi (2011) claimed that community-based disaster management (CBDM) is one of the existing and worldwide approaches for managing disasters. (CBDM) implies that people's participation in the disaster management cycle can be initiated from the basic phases of a procedure and finishes in the accomplishment and institutionalisation in the community. A descriptive-comparative study on the CBDM in different selected countries has been made in order to design a model for Iran. Six steps have included in the methodology dealing with some countries which have been chosen based on their participation in cases like planning, policy making, coordination, organising of disasters, control and their experience in accessing related information and disaster management. Jahangiri et al. (2011) found that the achievement of a successful disaster management needs a community contribution in different disaster management lifecycles. Jahangiri et al. (2011) admitted that the type of contribution might differ according to the features of each particular country.

Whereas, in **KSA**, a comprehensive multi-disciplinary framework was provided for disaster risk management in Saudi Arabia's Ministry of Interior (Directorate of Civil Defence) by

presenting the duple paradigm of disaster management (proactive mindset and reactive mindset). A guideline for all government levels will be served in order to perform disaster risk management. Similar to Iran's study, an analytical comparison was made for four international disaster risk management frameworks aligned with international good practices (Magrabi, 2011).

Whilst in **Jordan**, Sawalha, Jraisat, and Al-Qudah (2013) conducted an investigation study to recognise major threats that have the possibility to put Jordanian hotels in disaster or crisis circumstances. In addition to examining the frameworks/tools adopted by Jordanian hotels to manage disasters and crises. Cultural factors affecting the wider implementation of disaster and crisis management good practices in Jordanian hotels were also explored. A survey undertook "five-star" hotels in Jordan, as well as administered a questionnaire followed by semi-structured interviews, were conducted with three General Managers from three hotels of various cultural backgrounds: international; regional; and local. The study revealed that a comprehensive and effective framework/ tools for managing disasters and crises are lacking in Jordanian hotels. Furthermore, the wider adoption of disaster and crisis management good practices within Jordanian hotels are affected by organisational culture. Sawalha et al. (2013) concluded that the relevant authorities in Jordan should demonstrate the significance of disaster and crisis management to address crises and disasters more efficiently.

Because of the longstanding conflict and wars in Iraq, scholars about Iraqi disaster management have concentrated on human-made calamities such as conflicts, terrorism and industrial hazards. Moreover, Iraq's institutional disaster management ability is restricted; both on the national and subnational fields as well as a comprehensive and coordinated disaster management system being lacking. Likewise in some neighbouring countries (see Figure 2.20), a community contribution in different disaster management lifecycles is needed to achieve successful disaster management.

Figure 2.20 Iraq and Countries Surrounding Iraq Highlighted in this Paragraph

2.14 Chapter Summary

This chapter has focussed on identifying the key research areas relating to this study through a comprehensive literature composition. The review of the literature is pulled together on the major knowledge domains such as disaster, types of disaster, and terrorism. Moreover, the focus on the study (disaster response management) was discussed in greater detail on its four administrative stages: planning, organising, directing, and controlling (Lettieri et al., 2009). Further, challenges facing the four stages of disaster response management was also presented in addition to disaster management in Iraq and countries surrounding Iraq. The following chapter will discuss the research methodological design, where the methodology adopted to conduct this research is argued in detail.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

To address the main research issues of the study, a comprehensive literature has been provided through the previous chapter. The purpose of this chapter is to describe and discuss the rationale and justifications on the research methodological design of the study. Accordingly, the chapter is structured as below:

- Research Methodological Design
- Research Philosophy
- Research Approaches
- Research Strategy
- Research Choices
- Time Horizon
- Research Techniques

3.2 Research Methodological Design

It is widely agreed that a research methodology should be prepared prior to conduct any research. According to Blessing and Chakrabarti (2009, p. vii) a design research methodology "*should help identify research areas and projects, and in selecting suitable research methods to address the issues*". Blessing and Chakrabarti (2009, p. 9) also defined design research methodology as "*an approach and a set of supporting methods and guidelines to be used as a framework for doing design research*". Despite the risk and uncertainty in the research process, the possibilities of any failure could be minimised through using appropriate research design and by forecasting and identifying pitfalls and problems that the researcher might come across. Further, the overall research strategy identified through examining the philosophical aspects of the research by using research design. Accordingly, many frameworks can be identified within the literature on methodological aspects of conducting research. Among those is the nested model which gained popularity among researchers, introduced by Kagioglou et al. (1998) and the research onion model which was introduced by Saunders, Lewis, and Thornhill (2007), (2009), (2012), and (2016). While the nested model includes three elements to establish the research methodology, including research philosophy, research approach and research techniques, the onion model involves six steps, to include: research philosophy, research approaches, research strategies, research choices, data collection methods and timescale. It is

recognised that one of the important features of the nested model is that shows a simple way to understand the research methodology components as shown in Figure 3.1, however the research onion consists more layers and provides the researcher with clear guidelines of how to design the research appropriately through a series of logical reasoning and decision-making steps.

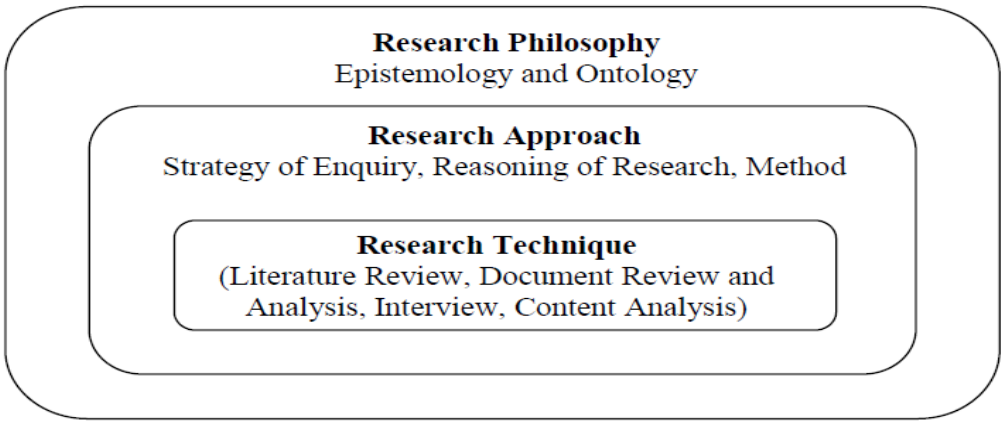


Figure 3.1. Nested Research Methodology Approach (Sources: Adapted from Kagioglou et al. (1998))

In order to explain the appropriate research methodology in this research, the 'research onion' model, as shown in Figure 3.2, was chosen due to its clear definitions and systematic order of processes starting from the research philosophy in the outer layer, down to the data collection and data analysis layer in the central point of the research onion. The following section describes in greater detail the research philosophy pertaining to this study.

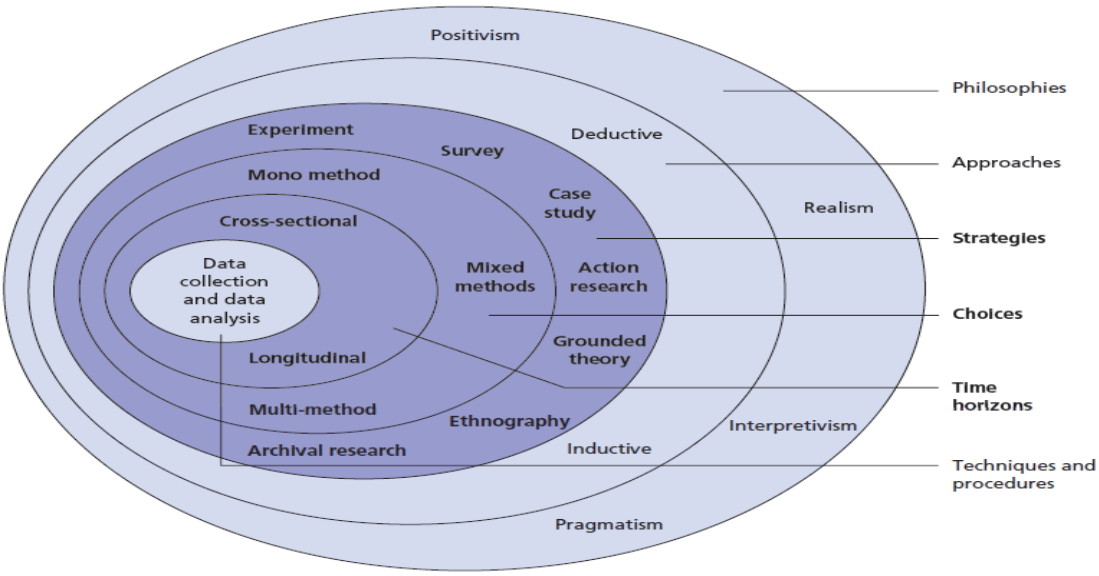


Figure 3.2 Saunders' Research Onion Model (Saunders et al., 2016, p. 164)

3.3 Research Philosophy

Saunders et al. (2016) consider the philosophy of research in the outer layer of the research onion. They also expressed it as an overarching term that relates to the development of knowledge and the nature of that Knowledge. Creswell (2009) stated that in the initial stage of the study, examining different philosophical perspectives and assumption is vital and should be carried out. Likewise, Easterby-Smith, Thorpe, and Jackson (2008) noted that having an understanding of philosophical issues is very important for at least three reasons and could help the researcher to:

- Clarify research designs.
- Recognise which design will work and which will not.
- Identify, and even create, a design that may be outside the researcher's past experience.

Most literature classified research philosophy into three main perspectives, namely ontology *"assumption that the researcher makes about the nature of reality"*, epistemology *"a general set of assumptions about the best ways of inquiring into the nature of the world or in the other words, an assumption about how researchers acquire and accept knowledge about the world"* and axiology *"assumptions about the nature of values the researcher places on the study"* (Creswell, 2009; Saunders et al., 2016). Whereas all are different from each other, the way in which a researcher thinks about the research process is influenced by each one (Creswell, 2009; Easterby-Smith et al., 2008; Saunders et al., 2016).

Within the context of an ontological position, there are two aspects; objectivism and subjectivism. Epistemological stances, on the other hand, were distinguished by Saunders et al. (2016) into positivism and interpretivism. With regard to axiology, the main emphasis in this philosophical branch is whether research assumptions are made in a value-laden or value-free environment (Collins & Hussey, 2009).

This research seeks to evaluate and explore the current disaster response management system in Iraq. Furthermore, due to the involvement of different experts in this process and the fact that their "subjective" perceptions and decisions collectively "socially construct" what is seen as the response to disaster "phenomena", the research falls mainly within the ontological stance into the **subjectivism** continuum. In addition, the researcher adopted an **interpretivistic** epistemological position in order to gain an in-depth understanding of social reality through studying peoples' attitudes and behaviours when responding to disaster events. Moreover, as this research is of an exploratory nature and the interpretation of interviewees (experts) forms

a major component of understanding the reality, combined with the expertise of the researcher in this particular field, it is **value-laden**, since value is added from both parties. Hence, a social constructionist approach is adopted. The philosophical stance pertaining to this study is illustrated in Figure 3.3. The following section will discuss research approaches pertaining to the study.

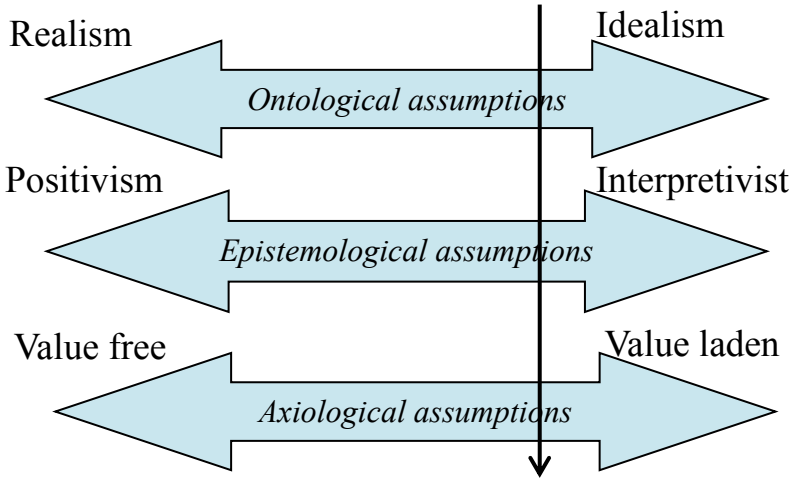


Figure 3.3 The Philosophical Stance Pertaining to the Study

3.4 Research Approach

As reported by Saunders et al. (2016), whilst the research approach relates to theory development, the selected approach will enable the researcher to answer the research questions and meet the objectives of the study. A research approach consists of three types; deductive, inductive, and abductive. The researcher, in the deductive approach, develops hypothesis or hypotheses. The hypotheses will be expressed in operational terms to explain the relationship between variables. The hypotheses will be tested prior to examining the specific outcomes and, if necessary, the theory will be modified according to the findings. Conversely, in the inductive approach, there is no development of the theory prior to data collection. Researchers in following interpretive approach, starting with the evidence and then building up a theory based upon it. Within inductive approach, according to Pathirage, Amaratunga, and Haigh (2008), the theory would follow the data rather than vice versa as with deduction. The third approach is the combination of deduction and induction which was called an abductive approach by Saunders et al. (2016).

In this research, the researcher used secondary data to review the significance of disaster management and deduce principles in building appropriate data collection tools. As such, the data collected are partly theory loaded. In addition, this research attempted to build a theory on improving effectively the disaster response management in Iraq. Therefore, this research used a combination of deductive and inductive approaches.

Based on the above discussion, in this study, abductive principles which combine deductive and inductive approaches are employed in the process of theory building. The reason behind this is that the research requires an examination of complex interactions between people with different concepts as well as needing a more complete picture of the real situation. Having discussed the research approaches, the next section looks into the research strategy.

3.5 Research Strategy

The research strategy is the next layer of the research onion. Many strategies used in business and management to collect real data can be adopted by the researcher. For any study, an appropriate research strategy choice is based on the research questions, objectives, the amount of time, the extent of existing knowledge and other resources available as well as the philosophical underpinnings (Saunders et al., 2016). Accordingly, research strategies commonly employed by researchers are an experiment, survey, case study, action research and ethnography (Easterby-Smith et al., 2008; Remenyi, 1998; Saunders et al., 2016). Yin (2014), on the other hand, included five major ways of undertaking social science research namely, experiment, survey, archival analysis, history and case study of which, the selection is based on the type of research question posed, the extent of control an investigator has over actual behavioural events and the degree of focus on contemporary as opposed to historical events. Yin (2014) did not include action research and ethnography in his division to research strategies. In fact, each strategy can be used for all three research purposes; exploratory, descriptive and explanatory. However, the most important issue is whether the selected strategy will enable the researcher to answer the research questions and meet the objectives of the study (Saunders et al., 2016).

The selection of the research strategy needs to reflect the philosophical stance of the study because some research strategies are likely to harmonise better with one particular research philosophy than the other. Accordingly, research approaches can be plotted in the research philosophical continuum as shown in Figure 3.4, due to their characteristics evaluation.

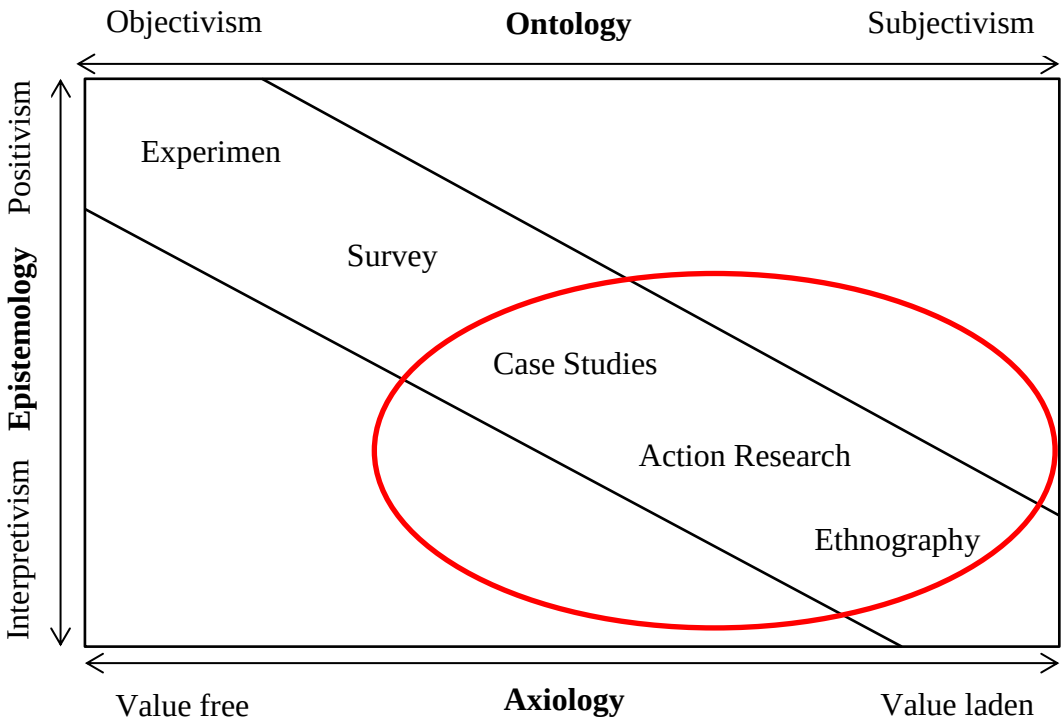


Figure 3.4 Research Strategies within the Philosophical Continuum - Adapted from (Sexton, 2007)

As can be seen in Figure 3.4 the positivism and objectivism positions are taken by experiments and surveys with respect to epistemological and ontological undertakings respectively. Because the philosophical stance of this research leans towards the interpretivism and subjectivism side, the use of experiments and surveys are unjustifiable. Experiments are mostly conducted in a laboratory setting under controlled environments where the context and the phenomena are separated (Yin, 2014). Experiments allow identification of casual relationships through observing the effect of the dependent variable by controlling the independent variable. Likewise, with experiments, surveys are also related to the deductive approach (Saunders et al., 2016). Whilst one advantage of surveys is that a large amount of data is generated, the disadvantage is that the depth of information is limited compared to the rich and detailed data that can be obtained from in-depth interviews and participant observation (McLafferty, 2003). Saunders et al. (2016) agree with this argument, indicating that research using opinion surveys can lead to ambiguous conclusions. There is more agreement from Yin (2014), who stated that surveys can test phenomena, but their ability to investigate the context is extremely limited.

As this research falls under the interpretivism and subjectivism stance and to answer the research questions and meet the objectives of the study, the researcher must examine three different strategies: action research, ethnography, and case study approach.

Firstly, an **action research** strategy. It is an iterative process involving researchers and practitioners acting together on a particular cycle of activities. Such strategy is unique in the way it associates to research and practice (Avison, Lau, Myers, & Nielsen, 1999). That forms a continuing action of planning, diagnosing, taking action and evaluating. Involving the employee (as the part of the research objects) throughout the research process is very important to implement changes they have helped to create (Saunders et al., 2016). Despite providing an in-depth understanding to a specific phenomenon, this strategy is inappropriate to achieve research objectives due to the lack of the required access to perform the intervention in the Iraqi disaster response management system.

Secondly, **ethnography** strategy. Saunders et al. (2016) mention to this strategy as "*a research strategy that is very time consuming and takes place over an extended time period as the researcher needs to immerse herself or himself in the social world being researched as completely as possible*". Since achieving the aforementioned factors is very limited as it not practically possible for the researcher to immerse deeply into the actual environment. Therefore, the ethnography strategy is not suitable for this study.

Thirdly, a **case study** strategy; and because of the open-ended inquiry used in case studies, it is suitable for building theory and generating hypotheses (Amaratunga, Baldry, Sarshar, & Newton, 2002). Further, due to the exploratory nature of the research, this research adopted a case study data collection strategy as the most appropriate strategy for answering the research questions of this study. Furthermore, it helps to verify the research findings. A case study has been defined by Yin (2014, p. 18) as "*empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*". Both 'what' type of exploratory questions and the 'why' type of explanatory research is covered by this approach. He added, in the natural setting, such an approach can assist researchers to investigate the phenomenon. Denscombe (2010) declared that by using a case study the researchers can examine the studied phenomena or the real-life situation. Moreover, it allows them to gain an in-depth picture of the relationships and processes within the phenomenon. The case study approach, as a result, is more common in qualitative studies when compared with quantitative studies. Miles and Huberman (1994), in contrast,

noted that the combinations of both quantitative (questionnaires) and qualitative (interviews and documents) data has been allowed in case studies to accomplish different aims and to serve different purposes. Yin (2014, p. 11) also supports this argument, he contends that " the case study's unique strength is its ability to deal with a full variety of evidence: documents, artefacts, interviews, questionnaires and observations". Therefore, the case study research strategy is capable of adopting different data collection methods and is usually used when it is required to obtain in-depth knowledge about a particular phenomenon.

To sum up, the research under consideration does not intend to change or influence the attitudes or procedures of the environment or the participants as does in action research. Nor does it intend to study physiology or behavioural patterns of the participants as in the case of ethnographical approaches. So the case study approach is suitable for this research to explore the current practices related to disaster response management in Iraq.

The selection of case study has been justified in the above section by considering the nature of the study, the philosophical stance, and the research questions posted. More justification for case study selection and its benefits will be elaborated in the section that follows.

3.5.1 Case Study Design

Having discussed why experiment, survey, action research, and ethnography research approaches are not appropriate for this study (see Section 3.5), this section discuss the use of case study as a research strategy and how the quality of this study will be enhanced by using such strategy. According to the aim, objective, and research questions shown in Section 1.3, an exploration of the current practices related to disaster response management is required from this study. Different views of individuals were identified regarding the criteria of good practice disaster response management, challenges, strength, and weakness points facing disaster response process in its different administrative functions. Therefore, this research requires a strategy which helps gathering of experts' opinions and an in-depth analysis. An in-depth analysis of the phenomenon under consideration is offered by case study (Gerring, 2007). Moreover, the views of the "actors" of the case under consideration could be incorporated by carrying out case study (Zonabend, 1992). Further, according to the definition of a case study that stated by Collis and Hussey (2013) "*a methodology that is used to explore a single phenomenon in a natural setting using a variety of methods to obtain in-depth knowledge*", some of the discernible characteristics of case study strategy has been identified. It is normally used when obtaining in-depth knowledge is required regarding a particular phenomenon as well

as its capability to accommodate different research techniques. Both qualitative and quantitative data also can be accommodated in case study research (Gerring, 2007; Yin, 2014). Although case study research presents many advantages to a research study as mentioned above, it criticised for bias, lack of rigor, use of incomplete evidence, and for being expensive and time-consuming (Remenyi, 1998; Yin, 2014). So far it can be argued that, despite the fact that case study is taking too long and expensive, the time and budget could be minimised by using careful design. Likewise, many drawbacks can be compensated by having a number of advantages. A variety of evidence is embraced by case study such as interviews, observation, and document reviews (Saunders et al., 2016; Yin, 2014). The richness of the collected data will be increased while creating the prospects for data triangulation.

Accordingly, the case study approach appears to be the most suitable method for this study, which caters 'What' and 'How' type research questions about a contemporary set of events, without differentiating between phenomena and context, where the researcher tends not to interfere with what is being studied.

Yin (2014) suggested four choices to design case study, namely, single case study (holistic) designs; single case study (embedded) designs; multiple case (holistic) designs; and multiple case (embedded) designs. Such choices are depending on the number of cases, single (one case) or multiple (more than one case) and the number of units of analysis, holistic (one unit of analysis) or embedded (more than one units of analysis). The next section will explain which choice this study has adopted.

3.5.1.1 Single versus Multiple Case Study

According to Yin (2014), "*a single case study approach is suitable when investigating critical, unusual, common, revelatory or longitudinal case*". A critical case is used when it challenges, confirms or extends a theory while the unusual case represents a rare situation. Conversely, a common case captures a typical or a representative project or case. Therefore, studying one case is adequate to get an understanding about the other cases. A revelatory case can be applied to study a phenomenon which was inaccessible previously. The phenomenon, as a longitudinal case, was studied over a long period of time.

The research under consideration fell under the critical case because the General Directorate of Civil Defence is the main administrative body when responding to disaster (Humayun & Al-Abyadh, 2014), especially when the situation is triggered by terrorism in Iraq. There are a number of stakeholders involved during disaster response stage, namely, General Directorate

of Civil Defence, Health Department, NGOs, and Iraqi Red Crescent Society. The General Directorate of Civil Defence working under the Federal Ministry of Interior can rightly be termed as the focal response agency (Humayun & Al-Abyadh, 2014) and it is the main administrative directorate during disaster response stage. Consequently, based on the critical view of experts involved in the disaster response activity, the extracted concepts were assessed. As a result, a valid theory which contributes to knowledge can be developed after revising the extracted concepts. Hence, in accordance with Yin's rationale for doing single case study design and the nature of the research objects, an opportunity to get better research outcomes might be acquired in this research if a single case study approach is adopted.

Accordingly, this study used the single case study approach due to the criticality of the theory development and refinement of the phenomenon. Further, the General Directorate of Civil Defence was considered the case study boundary for this study because the General Directorate of Civil Defence is the main administrative body when responding to disaster (Humayun & Al-Abyadh, 2014).

3.5.1.2 Holistic with Unit of Analysis

Miles and Huberman (1994, p. 25) stated that the unit of analysis of a study is a "phenomenon of some sort of occurring in a bounded context". Based on Collis and Hussey (2013) it is the focal point where the research problem, phenomena and the variables refer to and about which the data is collected and analysed. Due to its importance, Miles and Huberman (1994) considered the unit of analysis as the "heart" of the research. According to Yin (2014), there is a relation between the chosen unit of analysis and the research objectives. The unit of analysis might help in shaping the scope of data collection in the later phase. In this study, the unit of analysis is disaster response management.

Based on Yin (2014) opinion, a single case study has two variants, holistic design and embedded design. Because the General Directorate of Civil Defence has a same administrative system in all its branches or subunits distributed in all Iraqi provinces, the research boundary takes the General Directorate of Civil Defence as a case study boundary, and this research is focusing on a single unit of analysis which is "disaster response management". As such, this study is sought to adopt single case study holistic design.

The next layer of Saunders' research onion concerns with the research choice, the following section will explain it in detail.

3.6 Research Choices

There are two main categories for research choices according to Saunders et al., (2016), the mono method and the multiple method. The mono method points to using a single data collection technique and its corresponding data analysis procedures, whereas multiple methods are where more than one data collection technique and analysis procedure is used to answer the research questions of a study. In addition, multiple methods have been divided into mixed-method and multi-method studies (see Figure 3.5).

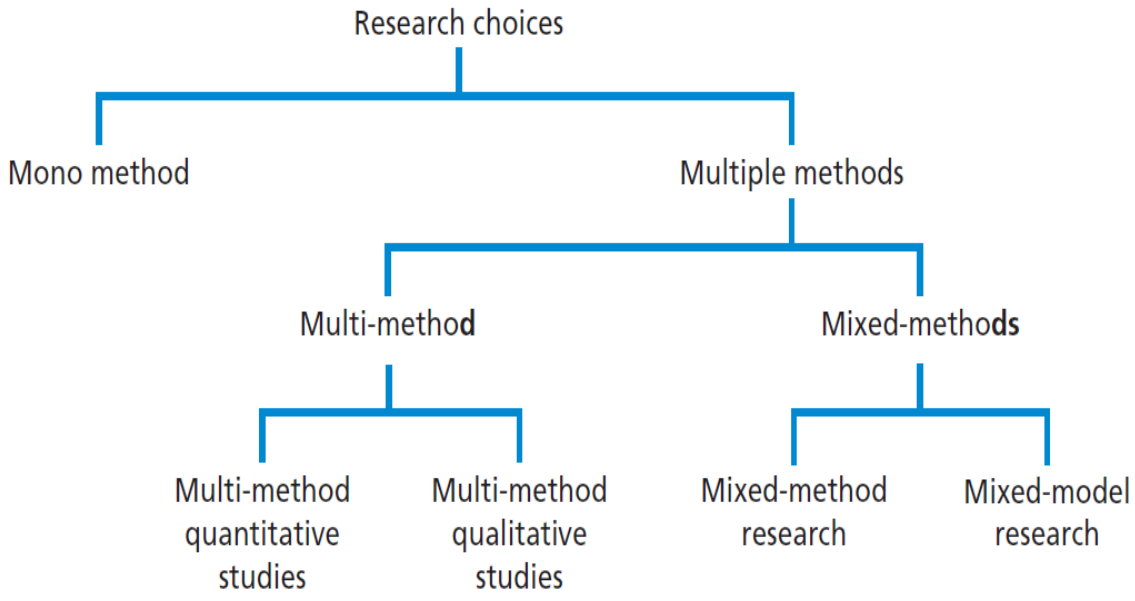


Figure 3.5 Research Choices (Saunders et al., 2016, p. 152)

Mixed-method is defined as using both qualitative and quantitative data collection techniques and analysing procedures in one research design. Meanwhile, multi-method is defined as using more than one method, either qualitative or quantitative, in a single study and analysing them in accordance with their relevant procedures (Saunders et al., 2016). Figure 3.5 shows the two main categories for research choices.

In social science, Bryman (2012) and Creswell (2009) argued that a researcher can adopt either objectivist or constructionist ontological positions or either interpretivist or positivist epistemological positions. In other words, qualitative or quantitative data or both have been involved in research choices. Saunders et al. (2016) indicate that individual quantitative and qualitative techniques and procedures do not exist in isolation. According to Creswell (2009) and Onwuegbuzie and Teddlie (2003), there are critical issues for both quantitative and

qualitative research that might cause biases, if it used in isolation. Therefore, in order to reduce the current gaps in each approach, the combination of both approaches in one main mixed approach might be beneficial. As a result, the validity of the findings can be enhanced. Bryman (2012) noted that in the mixed research approach positive benefits can be brought by using different methods to collect data since the weaknesses of any one method can be 'offset' by the strengths of another method.

Accordingly, more than one data collection technique and analysis procedure were used in this study. The mixed-method research choice was most suitable for this study in order to address the research question. As the result of the complexity of disaster response processes and to understand the real situation of the phenomenon, one single technique would not have been adequate. A better understanding of the phenomenon was therefore obtained from mixed-methods and thus both qualitative and quantitative approaches were applied. The findings of one method were used to clarify the results created by the other. To "peel off" the next layer of the research onion, the time horizon of the research will be discussed in the next section.

3.7 Time Horizon

A 'time horizon' aspect of research could be understood by looking at 'time horizon' subdivisions' features. Saunders et al. (2016) classified it to cross-sectional and longitudinal. In cross-sectional studies, the researcher studies one particular phenomenon at a particular time. Conversely, a longitudinal study focuses on a particular phenomenon and observes their changes and developments over time. Due to focusing on a particular phenomenon at a particular time, a cross-sectional aspect has been considered in this study.

3.8 Research Techniques

Data collection and their analysis procedures are related to research techniques. Walliman (2006, p. 50) defines data as "the essential raw materials of any kind of research. They are the means by which we can understand events and conditions in the world around as". The type of data collected can fall into two categories: primary data and secondary data (Saunders et al., 2016; Walliman, 2006). When the data collected from a researcher's own research, it is called primary data, while secondary data is the data obtained from existing sources. Walliman (2006) argues that although data can be collected from virtually everywhere, it requires a plan of action that uses and identifies the most appropriate and effective methods of data collection. Accordingly, the next section will elaborate on data collection techniques adopted in this study.

3.8.1 Data Collection Techniques

Various data collection techniques can be employed during a case study research strategy and that is considered one of the main advantages of it. Six sources of evidence can be obtained by a case study strategy, namely, documents, archival records, interviews, direct observation, participant observation and physical artefact (Dooley, 2002; Yin, 2014). Using multiple sources of evidence has been encouraged by Yin. Thus, an investigator can be allowed to address a broader range of behavioural, historical and attitudinal issues which leads to the development of a converging line of inquiry and a more accurate and convincing conclusion (Yin, 2014). Using multiple sources of evidence also encourages creating a case study database as well as maintaining a chain of evidence.

In agreement with the aforementioned argument, making records of all relevant evidence and creating a database may help the researcher to meet the study purposes. Such purposes can be obtained further by using a combination of both qualitative and quantitative research i.e. mixed methods research. Moreover, by triangulating the methods, a personal understanding of the phenomenon will be enhanced. Accordingly, a general picture of the real situation regarding Iraqi disaster response management was gained by using a quantitative method. By using such a method, the answer to the research question "What is the status of disaster response management in Iraq?" and all the consequent related probing questions were obtained. Further, in order to get a fuller picture, an in-depth understanding of the quantitative results was obtained by exploring experts' perspectives using the qualitative method of interviews. In addition, some significant and related documents were analysed in order to help the researcher to understand and further support the findings that were derived from questionnaires and interviews.

A wealth of information was obtained from both primary and secondary data. In this study, the resources of secondary data were articles, books, past theses, archival records, legislations, and relevant websites, while primary data were collected through questionnaires, interviews, and documents.

3.8.1.1 Questionnaire Design

The questionnaire is a set of proforma question distributed to individuals aiming to gather information (Saunders et al., 2016). An intensive investigation of the literature has been conducted to find the elements of good practice disaster response management in order to formulate the questions for the first draft of the questionnaire. After the completion of literature investigation, permission from the selected case was obtained. This permission was sought from

the senior managers of The Iraqi Directorate of Civil Defence because it is a hierarchical organisation. In the meantime, the researcher began designing the first draft questionnaire which needs to undergo through the required ethical approval process (see Appendix D). The questionnaire which has been designed in accordance with management stages (planning, organising, directing, and controlling) was reviewed by supervision panel. They suggested reducing the number of questions by deleting repeated and unrelated questions and to group and separate the questions for more clarity as well as to provide a definition for every stage within the questionnaire. The required amendments have been made and the questionnaire was translated into the Arabic language (see appendix E). To facilitate an efficient translation, the researcher also conducted a comprehensive investigation into Arabic literature to ensure the accurate technical terminologies are used.

The researcher conducted questionnaire survey within the case study. The questionnaire was divided into five sections (see appendix E). The first section asked about general information, while the rest four sections asked about the element of good practice disaster response management during planning, organising, directing, and controlling stages. By carrying out this survey, the difference between the levels of importance and implementation of various elements related to the different stages of disaster response management was investigated from a questionnaire survey.

3.8.1.1.1 Likert Scale

By using a Likert scale, the opinion and behavioural variables can be captured. Five scales of "importance" (unimportant, of little importance, moderately important, important, and very important) have been represented by Likert scale to capture the level of importance. Further, other five scales of "frequency" (never, rarely, sometimes, very often, and always) have been used to capture the level of implementation. In addition, a column for "no opinion N/O" has been added for both the scales. This addition is important as it would minimise the tendency for giving an inaccurate answer when the respondents lack knowledge or opinion for a specific question (Kulatunga, 2008). Table 3.1 represents the values designated for the Likert scale.

Table 3.1 Values Designated for the Likert Scale

Scale for importance	Unimportant	Of little importance	Moderately important	Important	Very important	No opinion N/O
Scale for implementation	Never	Rarely	Sometimes	Very often	Always	No opinion N/O
Value	1	2	3	4	5	999

The questionnaires were distributed to the staff with Captain military rank and above. 53 questionnaire surveys were conducted. All the respondents were executives responsible for disaster response in the Iraqi General Directorate of Civil Defence and were selected based on the experts' rank, knowledge, experience, and involvement with disaster response teams. Section 3.8.2 will discuss in detail how the questionnaire sample was selected. The questionnaire was designed to identify the difference between the levels of importance and implementation of the elements of the good practices and any gaps in every stage of disaster response management in Iraq. The extent of such gaps acts as a good indicator of the weaknesses and the good practice highlights the strengths of the current disaster response management. After completing this stage, the researcher carried out the pilot study.

3.8.1.2 Archival Records and Documents

To enhance the reliability and triangulate the research questionnaire and interviews about the disaster response management in Iraq, reviewing the existing information in archival records and documents were conducted in addition to the processes of the questionnaire and semi-structured interviews with the disaster response experts. According to Saunders et al. (2016) and Yin (2014), a collection of archival and current documents as empirical research field data is known as being important.

In this study, the archival records and documents to be analysed were identified from expert interviews. Documents such as studies, reports, statistics, follow-up, and laws have been gathered from the IGDCD and other organisation related to disaster response, for example, Iraqi Ministry of Health (see Table 4.1). Such gathering has been conducted during the interviewing stage. The types and design of semi-structured interviews will be discussed in the forthcoming section.

3.8.1.3 Interview Design

According to Amaratunga et al. (2002), interviews are deemed to be a favourable method in different research areas in order to gain in-depth data. It is widely considered that one of the common sources of evidence for the case study is interviews. Through a series of interviews, the data were collected. In this study, the most critical sources of evidence are the interviews. This is due to the capability of this technique to probe the current practices related to disaster response management. Further, the researcher is allowed to clarify any unclear answers with experts (Kumar, 2011) and access to sensitive information might be achieved. Saunders et al. (2016) stated that there are three ways to conduct interviews, namely, structured; semi-

structured or unstructured. Each kind of interview has its own disadvantages and advantages. Regarding the structured interview, the responses from the interviewees are limited which leads to less richness of the data. Conversely to that an unstructured interview, it lets the interviewees express freely without restriction. Consequently, the process of analysing the data might become more difficult due to the absence of consistencies (Myers, 2013). However, a semi-structured interview is established to extract valuable information from real experiences, interviewee's interpretations, and recommendations on the research topic.

Due to the aforementioned argument and because this research contains an in-depth study on the current practices related to disaster response management, a semi-structured interview will let the interviewees be more flexible in giving their response from various viewpoints with the consistency coming from a similar set of questions. The researcher prepared a few sets of proforma semi-structured interview questions for the interviewees. This form of questions was sent to the supervisor team to get their feedback. After receiving the supervisor team's feedback and making the amendments and translating it to the Arabic language, the semi-structured interview form (see appendix F) became ready to conduct the pilot study in April 2015.

The interview was designed to elicit the weaknesses and the strengths of the disaster response management and the recommendations to enhance the current disaster response practices. The interviewees are referred to in this study as E followed by the number, as this was the code assigned to each interviewee. 28 intensive semi-structured interviews were conducted with Lieutenant Colonel military rank and above. The next section will discuss in detail how the questionnaire and interview sample were selected.

3.8.2 Sampling of Participants and Interviewees

According to Saunders et al. (2016), in research, sampling is needed. Such requirement resulted from the limitation in obtaining information from the entire population. Sample selection is mainly relying on the research objectives. When deciding sampling technique, the researcher should not ignore factors such as time limitations, financial, and accessibility to the resources. Two strategies can be used in sampling: random sampling/probability sampling and non-random sampling / non-probability sampling. In random sampling, the chance of each element being selected from the population is usually equal, while, non-random sampling doesn't give an equal chance to each element being selected. Kumar (2011) sheds light on the usage of sampling within a quantitative research and a qualitative research. The sampling in the qualitative research is not significant, whereas a sample is used to represent the study population

in a quantitative research. Figure 3.6 illustrates some sampling methods under each of the basic strategies.

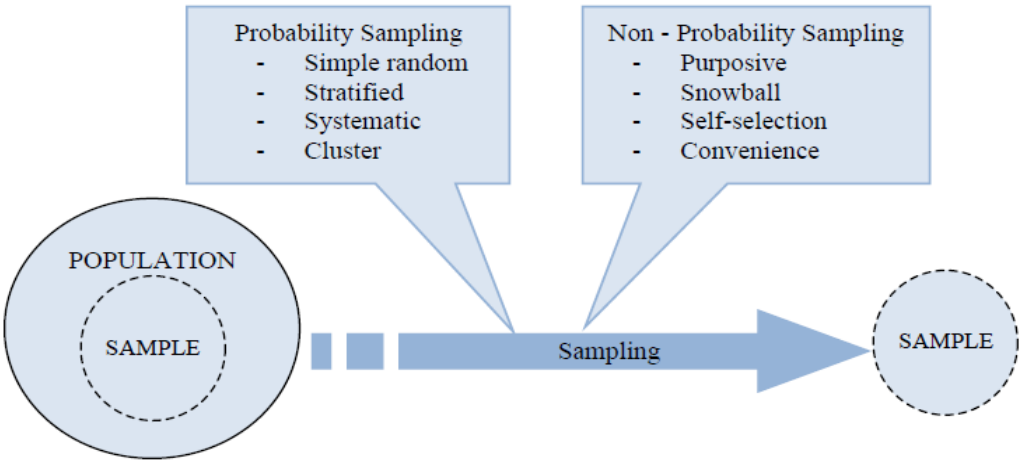


Figure 3.6 Sampling methods (adapted from Saunders et al. (2016))

According to the nature of the research outlined in chapter 1, the quality of the sample is required rather than the quantity for this study. Each person included in the sample was studied in more detail and greater depth and the researcher want to probe deeper with every person in the sample. Moreover, the researcher puts in her consideration how informative the sample is rather than the size of it. Therefore, to get enough information, the researcher selected a purposive sampling for this study. Kumar (2011) and Saunders et al. (2016) stated that purposive sampling is a sub-set of non-probability sampling where a specific sample is selected non-random way in order to obtain rich and specialised data related to a study.

Based on the experts rank, knowledge, experience, and involvement with disaster response team as advised in the pilot study, the questionnaire' responders and interviewees were deliberately identified with the help of the senior manager and the manager of IGDCD.

For the questionnaire survey, 53 members of Iraqi Directorate of Civil Defence were involved because there is a need to understand the studied concepts as they existed currently in the studied case. A questionnaire was distributed to the staff with Captain military rank and above (53 officers) who are currently working in the selected case. The reason for distributing the questionnaire is to explore the current situation related to disaster response management in Iraq with particular reference to terrorism and identify the weaknesses and the strengths of the current disaster response practices.

In qualitative research, deciding a sample size is complex in nature. In the same time, the sample size in a qualitative research is not an essence unlike in a statistical research (Kumar, 2011). The researcher achieved an adequate size when she reached the saturation point in her data collection. Such point is achieved when no new themes are discovered or new information is received (Kumar, 2011; Saunders et al., 2016). Saunders et al. (2016) recommended non-random minimum sample size which is illustrated in Table 3.2.

Table 3.2 Minimum Size for Non-Probability Sample (Saunders et al., 2016, p. 297)

Nature of Study	Minimum Sample Size
Semi-structure/in-depth Interviews	5-25
Ethnographic	35-36
Grounded Theory	20-35
Considering a homogenous population	4-12
Considering a heterogeneous population	12-30

By using a combination of purposive sampling and a snowballing method, the interviewees were selected from the case study. Based on Saunders et al. (2016) minimum non-probability sample size for semi-structured interviews which has been shown in Table 3.2, twenty-eight semi-structured interviews were conducted with Lieutenant Colonel military rank and above.

3.8.3 The Pilot Study

At the beginning of April 2015, the researcher travelled to Iraq to conduct the pilot study to get ready to perform the case study. To increase the reliability and validity of the research tools, the precision of such tools on addressing the research question was checked. The researcher also intended to estimate the time required for the interview exercise. Further, discussion about a sampling of participants and interviewees has been undertaken in order to obtain contact detail of such participants and interviewees and to have a feedback about selecting the sample.

The pilot study for the questionnaire and the semi-structured interview questions started at the beginning of April 2015 with three voluntary experts who suggested some amendments only to the questionnaire questions. Those experts completely agreed with the semi-structured interview questions. According to voluntary experts' comments, the questionnaire questions were clear in term of language except that few terminologies were not very clear especially

with the Iraqis context. But at the same time, it will be easy to comprehend content, if the responder is from medium and higher rank such as captain, major, lieutenant-Colonel, colonel, Brigadier-General, and above. Therefore the experts stressed on choosing the sample for each of the questionnaire and interview-based on the ranking. They further advised regarding researcher's interview skill in order to elicit more deep and rich information from the interviewees because there are questions regarding their personal opinions and experience on the weaknesses and the strengths of the current practices related to disaster response management. Based on experts' feedback, the researcher updated the questionnaire and interview questions. Accordingly, the data collection tools were ready by July 2015 to use within the case study.

3.8.4 The Main Study

The researcher travelled to Iraq at the beginning of July 2015 to distribute the questionnaire (see Appendix E). In order to receive the completed questionnaire, the researcher stayed in contact with the respondents. Meanwhile, face-to-face interviews had been conducted with key officials at the most convenient time and place for the interviewees the selected case. An interview guideline which includes; the interview questions, the security and management of the interview responses and research information have been given to each interviewee. Further, all interviewees' personal information is taken as anonymous. Each interview lasted from 50 minutes to 90 minutes. All interviews run smoothly as planned.

To communicate with all respondents, oral and written Arabic had been used as the respondents were more comfortable with their local language. During the interviews, audio recording is usually very helpful to make sure the accuracy of the translation. However, the researcher could not use the audio recording due to the sensitivity and high-security nature of the place. Consequently, direct paper transcription was used to document answers and any other comments related to the questions made by interviewees. For analysis purposes, paper transcription, which was in Arabic, was then translated to the English language. Document and archival records were obtained with the help of interviewees to further understand and evaluate the current practices related to disaster response management.

This data collection journey took about six weeks. At the beginning of September 2015, the researcher was able to collect 53 completed questionnaires and 28 interviews when the saturation point has been achieved. After completing data collection stage, data analysis process

began. The following section presents how the objectives are addressed through the data collection techniques.

3.8.5 Objectives of the Study and how they are addressed through the Data Collection Methods

Table 3.3 below illustrates how the objectives are addressed through the data collection techniques.

Table 3.3 Objective of the Study and Method of Investigation

	Method of Investigation			
		Case Study		
	Literature Review	Semi structured interviews	Questionnaire Survey	Document Analysis
To critically review the significance of disaster management in general and the disaster response management stage in particular.	X			
To evaluate and synthesise the current status of disaster response management stemming from terrorism in Iraq.		X	X	X
To critically evaluate the weaknesses in the disaster response management stage with particular reference to Iraq.	X	X	X	X
To critically evaluate the strengths in the disaster response management stage with particular reference to Iraq.	X	X	X	X
To make recommendations to improve the effectiveness of disaster response management stemming from terrorism in Iraq.	X	X		X

After discussing the data collection techniques and completing data collection stage, data analysis process began. The following section discusses in detail the data analysis process.

3.9 Data Analysis Process

It is widely considered that one of the main parts of any study is the data analysis because it helps to inspect the gathered data and to arrive at suitable conclusions according to such data. Data analysis procedures consist of examining, categorising, tabulating, testing or otherwise recombining both qualitative and quantitative evidence to address the initial propositions of a study (Yin, 2014). The qualitative data highlights all non- numeric data or data that has not been measured however quantitative data highlights all numeric data (Saunders et al., 2016). Yin (2014) emphasises that to reduce potential analytical difficulties, a general strategy for data analysis should be developed. Such strategy will lead the researcher when selecting an appropriate data analysis tool, ensuring that the evidence is addressed properly, thus generating convincing and sound analytical conclusions while discarding any alternative interpretations. Moreover, despite the existence of a various method of data analysis, no specific data analysis has been found to accommodate case study (Petty, Thomson, & Stew, 2012; Yin, 2014).

In this study, NVivo and MS Excel software was used to analyse the data and present it in the appropriate form. Using such software will establish continuity and increase both methodological rigour and transparency (Saunders et al., 2016). This step was conducted after transcribing the collected data from non-written evidence (interviews) to written accounts.

3.9.1 Analysis of Questionnaire Surveys

MS Excel software was used to analyse the data gathered through a questionnaire. After the researcher arrived back in the UK at the beginning of September 2015, the data entry process started immediately. The results from the questionnaire have been entered and analysed.

By using the Likert scale in its 5 points' grading for the degree of importance and for the degree of implementation as explained in Section 3.8.1.1, quantitative data was collected and such primary data was entered into MS Excel spreadsheet. To minimise and avoid any errors, the data set was further proofread.

To handle the missing data "no opinion N/O", Saunders et al. (2016) argue that a special code for missing data is often reserved by statistical analysis software. For example, 999 is used to distinct the missing data from other answer codes (Wilson, 2013). Therefore, subsequent analyses can exclude such missing data when necessary (Kulatunga, 2008; Saunders et al., 2016; Wilson, 2013).

According to Saunders et al. (2016), the three most used ways of measuring the central tendency in business research are: mode, median, and mean (average). The median is the mid-point of the data whereas the mode is the most frequently occurring value. The most frequently used measure of central tendency is the mean value since it encapsulates all the values in the sample and hence it was used in this study. Accordingly, to measure the importance and the degree of implementation of the element of good practice disaster response management, the researcher calculated the mean value i.e. the average value of the data sets.

3.9.1.1 Presentation of Questionnaire Survey Analysis

The questionnaire survey findings were presented by using radar charts. The gap between the importance and implementation was presented, as shown in Figure 3.7. The extent of such gaps can be given a good indicator to the weaknesses and the strengths of the current practices related to disaster response management.

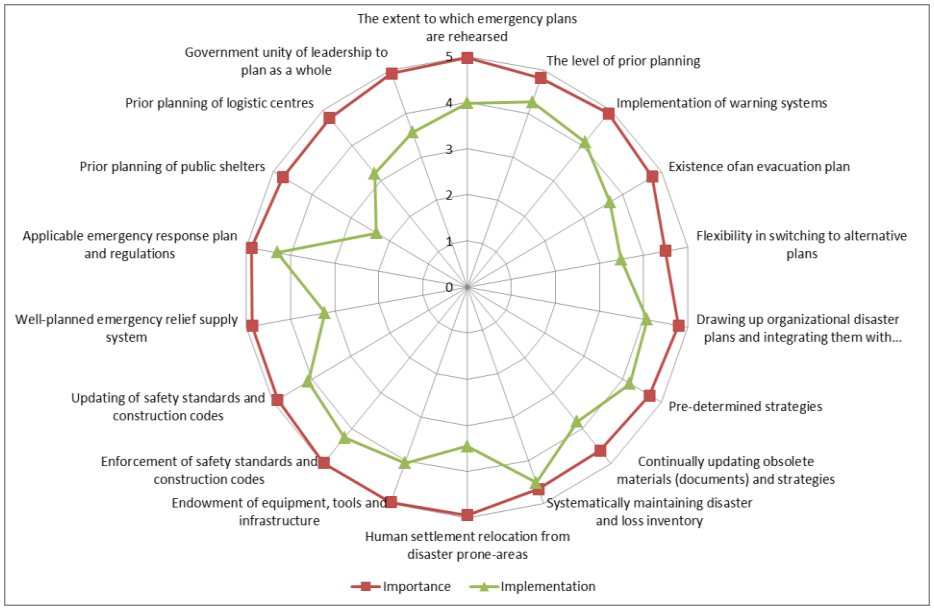


Figure 3.7 Radar Chart for Every Data Set to indicate Both Importance and Implementation's Value

3.9.2 Analysis of Semi-Structured Interviews

Because of the use of semi-structured interviews, the free flowing text was obtained as qualitative data. To analyse such data within this study, content analysis has been utilised. This section will explain the use of it. In qualitative research, content analysis is widely used. Significant desired raw information such as implicit or explicit data are extracted from texts or images by using this method. Before making interpretation and valid inferences, such

information will be organised into a systematic concept (Busch et al., 1994-2012; Krippendorff, 2012; Kulatunga, Amaratunga, & Haigh, 2007; Smith, 2000). The content analysis tool is also able to quantify qualitative data (Kulatunga et al., 2007; Vaismoradi, Turunen, & Bondas, 2013). Based on Kulatunga et al. (2007), in qualitative research, four approaches to content analysis has been presented. Firstly, word count, by counting the frequency of identified words, the importance of the words can be showed by using the assumptions of the most frequent word. Secondly, the conceptual content analysis focuses on identifying the occurrence and presence of an identified concept and/or themes is examined in text or sets of text (Busch et al., 1994-2012). The predetermination of concept or themes could be through the literature review or appear from the information itself. Thirdly, the relational analysis considers the relation between concepts inside the text is analysed by this approach (Busch et al., 1994-2012). Fourthly, referential content analysis focus on the underlying meaning of the text is examined and text interpretation is based on the researcher judgement.

In this study, the researcher sought to explore the interviewee's thoughts about the current disaster response practices. Therefore, the attitudes and opinions concerning the current practices related to disaster response management in Iraq, weaknesses and strengths of the current disaster response practices were examined. The interviewee's recommendations to enhance the current disaster response practices were also explored. Mere word counting, within this scenario, would not guide the researcher to accomplish the ultimate goals by extracting major concepts from the study. In addition to that, it is not anticipated to develop relationships among the concepts, within the range of the content analysis, nor planned to analyse the complexity of the language. Consequently, by considering the requirements of this study, as this study aim to evaluate and make recommendations to disaster response management in Iraq, the documents related to disaster response management and the experience of the interviewees were investigated by using conceptual content analysis approach. Such approach was selected because it presents the opportunity to inspect the interviewees' answers in multiple methods so as to discover data which are important to the study. Accordingly, to provide insight on the disaster response management in Iraq, the conceptual content analysis has been utilised in this study.

3.9.2.1 Presentation of Semi-Structured Interview Analysed Data

As conceptual content analysis was identified as the most suitable method to achieve the aim and the objectives of this research, a computer software package called NVivo was used to aid such type of analysis. Since NVivo is a software package that supports qualitative research. It

has an ability to collect and organise qualitative data, such as an interview. The researcher chose to use NVivo 10 because such software provides great management for the interview transcription and supporting the execution of content analysis. Further, the numbers of interviews were too large to handle manually. The most importantly, in addition to it is easy to understand and simple, it permits a rigorous and comprehensive data analysis process.

The researcher followed a procedure in coding to conduct the analysis using NVivo software. Firstly, the raw data from the interviews are transcribed into text format using Microsoft Word software. After that, this data is imported to NVivo. The preliminary themes and codes using the literature review and manual analysis on the transcripts were then initially established prior to developing themes in NVivo. In NVivo, the theme is known as a node. The structure of such nodes is based on the key theme of the semi-structured interview that reflects the objectives of the study. Finally, the researcher conducted further analysis to the coded texts after developing the nodes. These multiple stages approach that were used to code the interviews transcription are sometimes named open coding, axial coding, and selective coding process (Hayat & Amaratunga, 2014). The researcher in the open coding stage coded and named the information from the interviews depending on the key ideas of the emerging information. At the axial coding stage, the researcher categorised and gathered the nodes into relevant themes (see Figure 3.8).

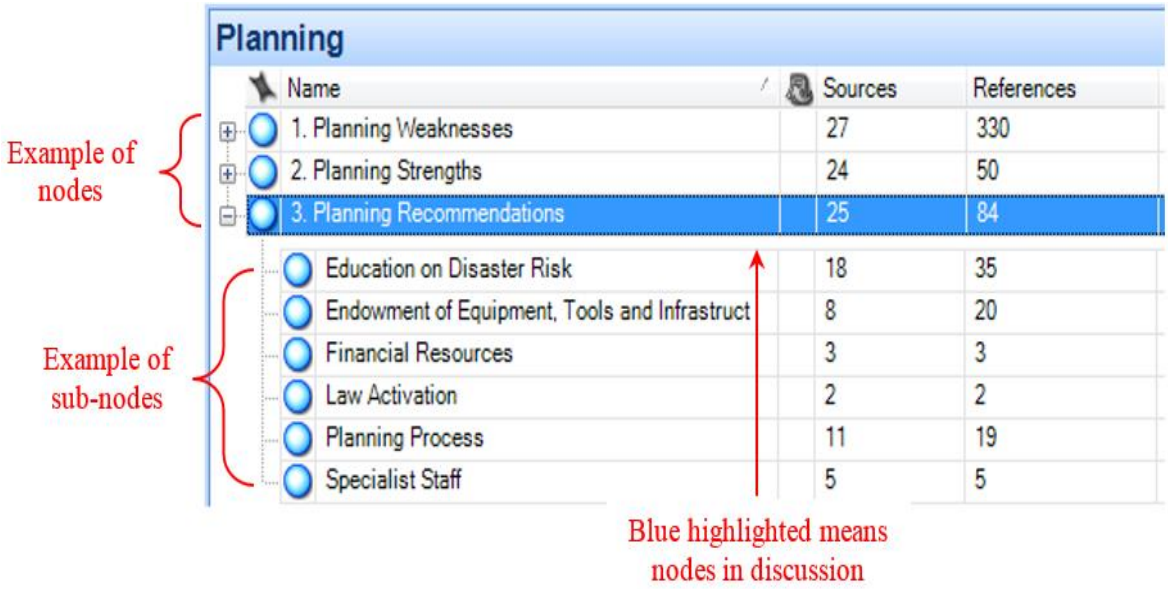


Figure 3.8 Example of Data Presentation Using Nvivo 10

After finishing the axial coding process and in order to add more elaboration and discussions, the transcription codes were exported to Microsoft word software. The researcher after that

extracted the information from the transcription depending on its suitability and relevance to the themes. The researcher used direct quotations of the interviewees when presenting the arguments. Thus, this procedure is named selective coding. Accordingly, a series of matrices of themes has been presented after classifying the analysis of data. Throughout this process, in-depth or detailed descriptions were used to give the reader a better understanding of the underlying conditions behind the phenomenon and the activities that had taken place. The credibility of the study was presented through these in-depth descriptions.

Having designated all the elements in the methodological framework, from research philosophy to date collection techniques and analysis, the research methodology adopted by this study is summarised in the following onion model of Saunders et al. (2016) (see Figure 3.9).

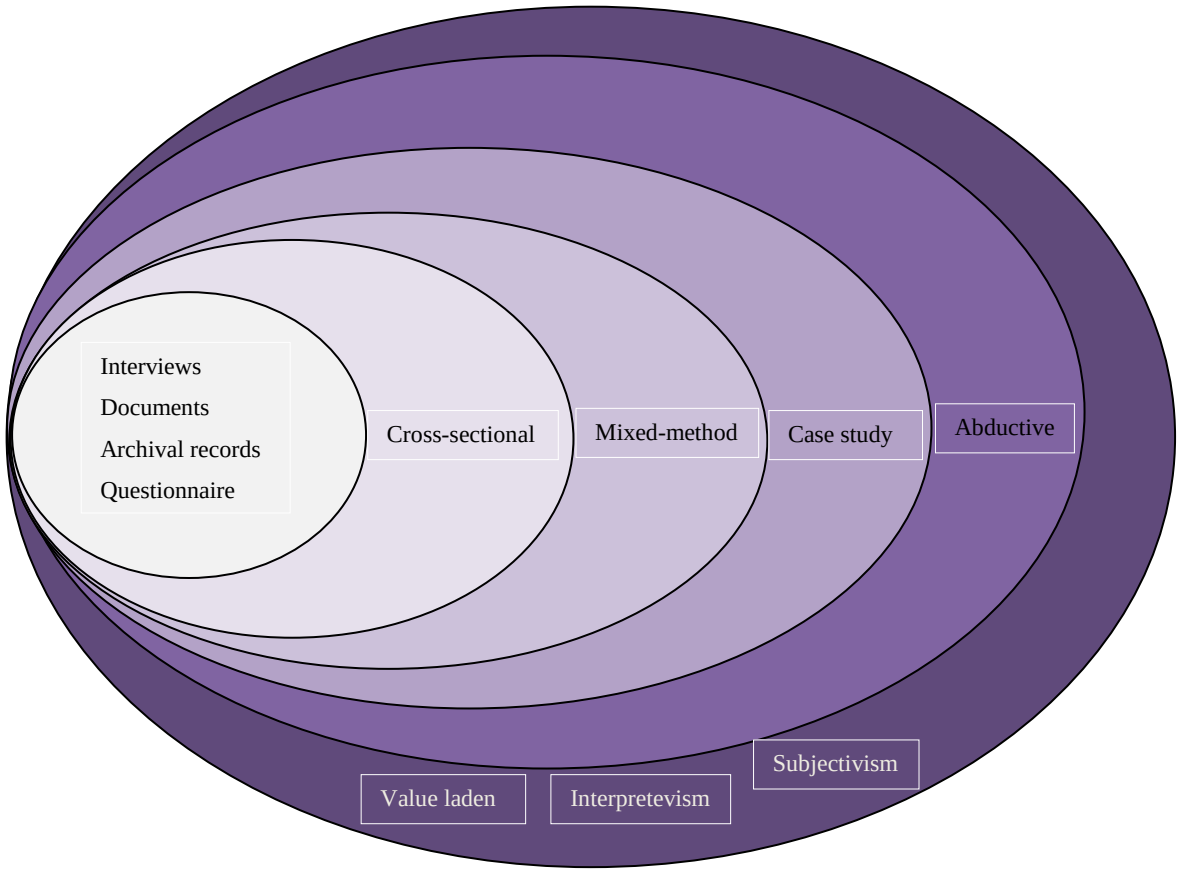


Figure 3.9 Methodology for this Research Adopted from Saunders' Research Onion

3.10 Validity and Reliability

In any research, having precise data and strong results are importance to achieve quality (Creswell & Miller, 2000; Golafshani, 2003; Suter, 2012; Yilmaz, 2013). Yilmaz (2013) presented a description for both validity and reliability. Validity is an *"accuracy of data"*, however, reliability is a *"consistency or the degree to which a research instrument measures a given variable consistently every time it is used under the same condition"*. A research needs to satisfy specific standards in collecting and measuring data to obtain reliability and validity. Golafshani (2003) noted that biasness can be eliminated by achieving validity and reliability in a qualitative research.

To maximise validity and reliability in social research, four tests are common used, namely, construct validity; internal validity; external validity; and reliability (Yin, 2014). For the construct validity, the researcher should consider it in data collection stage in order to create the accurate operational measures for the study context. Whereas to find a relationship between events, the internal validity is needed and it is applicable mainly in experiments and causal studies (Gibbert, Ruigrok, & Wicki, 2008). The external validity concerns on whether the findings of a study can be stratified in another study. Furthermore, the reliability is the possibility of achieving a mirror result by repeating the same case study.

In this research, by choosing a suitable research design and appropriate data collection tool, the validity of the process can be achieved. Further, by triangulating the data collection methods and conducting the piolet study, presented in (Section 3.8.3), the reliability can be enhanced.

In addition to these four tests, there is also credibility. It shows that to what extent the research findings can be believable and acceptable. By presenting how the interpretation has been conducted taking into account any bias, this issue can be addressed. For this research, the credibility was enhanced by using in-depth or detailed descriptions.

3.10.1 Validity of the Recommendations

After completing the analysis process of all data, the emerged finding from primary and secondary data was presented as sets of recommendations that are suggested to enhance the disaster response management in Iraq. In order to verify and validate the recommendations, three executives responsible for disaster response in the main administration (purposely selected) from the Iraqi General Directorate of Civil Defence were interviewed by the researcher (see Section 5.8). To refine the recommendations, the interviewees were questioned

about the appropriateness of the recommendation, and to check whether they were classified appropriately under the different research themes. By conducting content analysis, few comments, which were received from experts, were addressed to make an improvements or changes to the final sets of recommendations (see Section 5.9).

3.11 Research Methodological Framework

To achieve the aim of the research and addressing the research objectives, the selected sources of evidence were tailored carefully by constructing a robust research design. Both Bryman (2012) and Creswell (2009) argue that the research design is the framework set by the researcher in order to collect the data and analyse them. Further, the researcher should clearly address the scope of the examination. In this chapter, the research methodology adopted for this study was discussed and justified.

Therefore, in order to summarise the procedures used, this section shows the research methodological framework of the study as a flow chart, identifying the three main stages as expressed in Figure 3.10, in order to articulate the logical steps taken throughout this study.

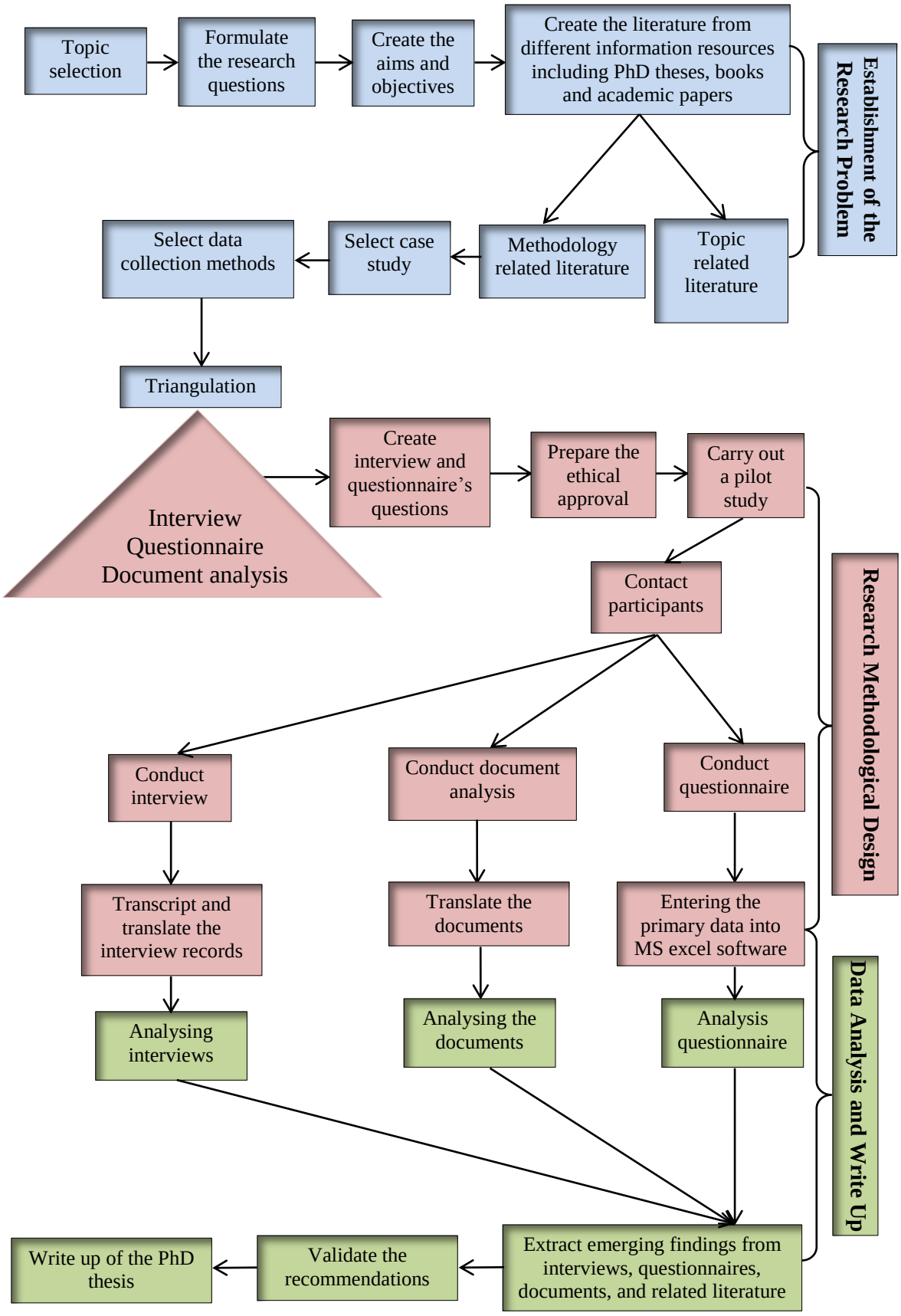


Figure 3.10 Research Methodological Framework

3.12 Ethical Approval

Throughout the process of conducting this study, ethical issues were carefully considered in order to ensure integrity. As the university's code of ethics provides a statement of principles and procedures for conducting research work, the conduct of this study was guided by this code. Before the primary data collection process began, a formal application for ethical approval, stating all conditions and activities for this research area, was submitted and approved by the Research Ethics Panel, University of Salford, in line with the requirements of the university. To avoid misconduct in research data analysis and interpretation, gaining appropriate ethical approval is critical. To maintain the University of Salford's ethical standards and guarantee integrity, the following conditions were met:

- Obtaining access data permission from the selected case "The Iraqi General Directorate of Civil Defence" see Appendix G.
- The participants were selected only after confirming their desire to participate in the research.
- Interviews were held at times that were convenient for interviewees.
- Interviewees were able to stop the interview at any time.
- Interviewees were fully informed about the purpose and nature of the research.
- The confidential treatment of personal information was guaranteed prior to the interviews.
- The data collected via the questionnaire and interviews was treated (in terms of its storage and protection) with strict confidentiality and handled only by the researcher.

With regard to the secondary data collection, all sources, authors and contributors of information were properly acknowledged and well referenced, using the approved university system. To ensure that the data were conducted in a successful way through collecting, interpreting and analysing valid and reliable data, ethical approval was fully adhered to. In addition to that, explicit approval to publish the name of The Iraqi General Directorate of Civil Defence was obtained, so that permission was granted to include their name in the thesis, this is shown in Appendix H.

3.13 Chapter Summary

In this chapter, the research methodology adopted for this study has been presented and justified by discussing how the research philosophy, approaches, and techniques were designed to address the research problem of the study. Moreover, the design of a single holistic case study and the measures conducted to ensure the acceptability of the research findings were also discussed. The chapter that follows moves on to describe in greater detail the analysis of the interviews, questionnaires, and documents.

CHAPTER 4 DATA ANALYSIS AND INTERPRETATION OF RESULT

4.1 Introduction

The description and analysis of the single case study will be shown in this chapter. Within the case study, analysis of the interview transcript, questionnaires and documents will be provided as well as discussion of the experts' opinions on the current practices related to disaster response management and the current administrative system's ability to respond to human-made disasters stemming from terrorism in Iraq. By using NVivo software, the interview data was analysed and a number of themes and sub-themes were revealed related to the different stages of disaster response management in Iraq (planning, organising, directing, and controlling). In addition, recommendations for the overall disaster response process and for each stage of the process will be given in order to enhance Iraqi disaster response management in the future. Before conducting this analysis and discussion, a detailed description of the background to the General Directorate of Civil Defence will be provided.

4.2 Case Study Background

The General Directorate of Civil Defence is one of the formations of the Iraqi Ministry of Interior. This directorate has undergone a number of changes before appearing in its present form. It started in Baghdad after the British occupation of Iraq in 1917 with the formation of a firefighting force, based at the Al-Rashid Campsite. It consisted of 25-32 men and it only had one fire engine, one riverboat and one horse-drawn carriage at its disposal. The situation continued, without progress and development, until the year 1936. After the creation of the Iraqi state, the firefighting force became the Directorate of Firefighting and Mechanical Matters. Its headquarters relocated to the secretariat of the capital building and then in 1938 moved to Sheikh Omar Street. The year 1942 saw the birth of the first official department for Iraqi civil defence and was then known as the Directorate of Passive Defence, linked to the Ministry of Defence. This directorate, in fact, was a superficial formulation because it was not seriously enriched until 1956 and the issuance of civil defence decree no. 2 in 1957. The number of its members was not more than 100 men, 5 cars (one fire engine and four cars to transport water), 2 portable pumps, and one firefighting centre. After 1960, the number of its men and machines increased year by year. In 1975, Iraq witnessed active industrial shifts, economic developments and a construction boom, which created comprehensive new factors that raised the degree of exposure to the dangers of fire with the possible doubling of damage it could cause. This led to

the creation of the Industrial Security Department within the Civil Defence Directorate. In addition, a new cooperation was generated between the basic firefighting facilities, which were: the Baghdad Directorate of Firefighting, the military firefighting services, and the oil facilities firefighting services. After that, in the year 1979, the Baghdad Directorate of Firefighting was separated from the secretariat of the capital and was attached to the Ministry of Interior, then renamed the General Directorate of Civil Defence. It received great support and was modernised according to global specifications in mechanisms, facilities, equipment, and materials.

At the beginning of the 1980's, another stage began which was the start of supplying the Directorate of Civil Defence with diverse scientific capabilities in all areas. At that time cumulative practical experience, mixed with academic research and supported by theoretical knowledge, enhanced ambition. These were the basic building blocks for another generation to deal with events with knowledge and experience. Modern fire engines were imported at the time, but as they were only in low numbers they did not fill the need. To bridge the gap in information and experience in the field of firefighting, like any young institution, a limited number of specialists were sent to attend courses outside the country.

In the middle of that decade, firefighting entered another stage characterised by a qualitative change. This was represented by making firefighting one of the internal security forces under Law No. 53 which came into force on 15th October 1985. Soon the civil defence was exposed to many cracks and setbacks, particularly from the early 1990's, soon reaching its worst in capability at all levels. The implementation of this law led to firefighting suffering from a very severe shortage so that its capabilities declined. The reasons for this are related to the adverse effects of the numerous wars, the form of the hierarchical structure of the state and priorities of importance in it, which overlooked the role of civil defence and its importance. This decline continued until 9th April 2003 when the regime was in Iraq was changed (Abdel Hafez & Abdul Sattar, 2015). In the post-2003 era, there were fewer natural calamities, longstanding wars or local conflicts, there was, however, more turmoil. Accordingly, Iraq's institutions had limited scope and mandate (Humayun & Al-Abyadh, 2014, N.D.).

Currently, the focal agency for disaster response in Iraq at all levels is the General Directorate of Civil Defence, which is work under the Federal Ministry of the Interior. It provides vital services including evacuation, rescue, fire-fighting, ambulance, medical services, emergency communications, and shelters in the case of disaster (Humayun & Al-Abyadh, 2014, N.D.).

Apparently, almost all of the limited disaster response capacity of the GOI lies in the General Directorate of Civil Defence of the Ministry of Interior and the General Directorate of Public Health and Primary Health Care. In order to respond to disasters ad-hoc support to the GoI is provided by the International Committee of the Red Cross, the United Nations, and national/international non-governmental agencies (Goodyear, 2009).

Having briefly identified the background details of the Iraqi General Directorate of Civil Defence, which leads the response process to human-made disasters stemming from terrorism in Iraq related in the case study.

4.3 Interview Analysis – Planning Stage

The data collected from the Iraqi General Directorate of Civil Defence are presented in this section. The analysis of this data started by categorising each stage as being either a weakness, strength, or recommendation for disaster response management. Subsequently, sub-themes were extracted from the collected data on each main theme. The following are the interview responses and discussions for the planning stage of disaster response management in Iraq.

4.3.1 Weaknesses during the Planning Stage

Points of weakness have been extracted from interviewees' transcriptions in order to complete the important elements in the evaluation of the current Disaster Response Administrative System. Planning weaknesses' sub-themes as showed in Figure 4.1 below will be argued in the following sections.

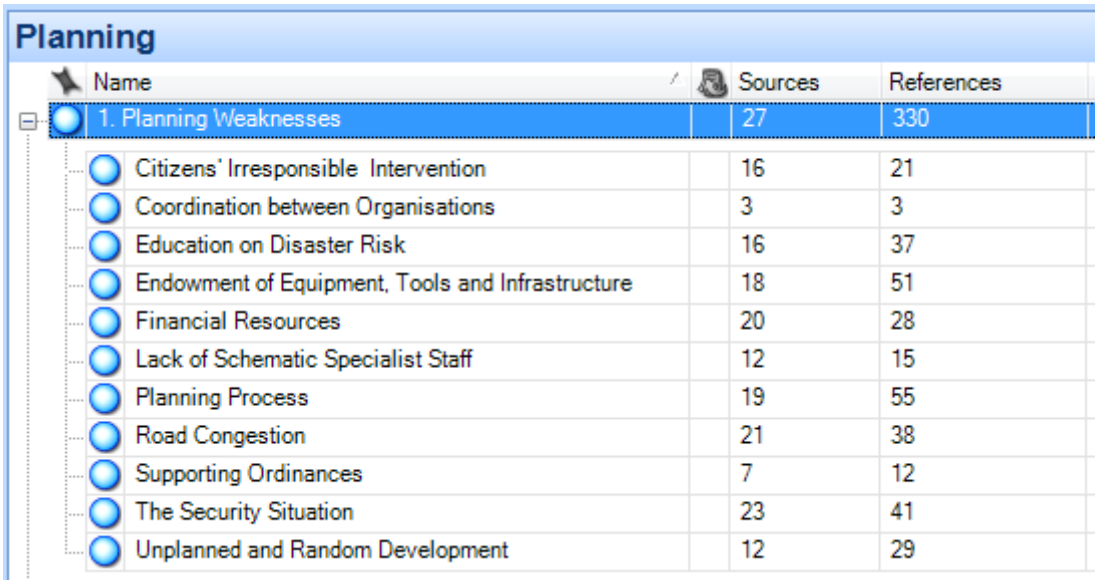


Figure 4.1 Nodes for Planning Weaknesses

4.3.1.1 Citizens' Irresponsible Intervention

Disaster response planning is only as good as the assumptions on which it is based. However, some of these assumptions are very difficult to imagine, particularly when it relates to citizens' intervention at the scene and the consequences of such an intervention. According to interviewees E1, E2, E6, E8, E10-E13, E15, and E22-E24, effective disaster response planning has suffered from citizens' intervention at the scene that makes the response process very difficult. Interviewee E11 mentioned: *"It is difficult to contain the chaos during the incident because of the irresponsible intervention of citizens"*. Some of the interviewees, E3, E4, E9, E13, and E20, attributed this situation to a **lack of society's awareness** or citizens' knowledge about not interrupting the official disaster responders' work whilst performing their duties. One of the interviewees, E3, captured this as follows: *"There is a lack of citizen awareness of the necessity for non-interference by the crowd near the scene"*.

Interviewee E11 pointed out that another reason for citizens' intervention is due to local police **not imposing a proper security cordon**. While interviewees E4 and E20 agree with E11's view, they believe that citizens' intervention can be exploited by suicide bombers or terrorists, who could cause dual or sequential bombings. Dual or sequential bombings are considered the most challenging problem facing the official disaster responders in Iraq. It costs a lot of disaster responders' lives. The next section is another sub-theme that is related to planning weaknesses.

4.3.1.2 Coordination between Organisations

It is widely acknowledged that to conduct an effective planning process, inter-organisational coordination should be considered by disaster response planning, yet interviewees E4, E13, and E14 stated that this was one of the more complex difficulties inhibiting the planning process. A clear indication is given by interviewee E4 that there was a *"**lack of cooperation from the rest of the organisations in executing the plan**"*. In a similar way, interviewee E14 asserts that *"The plans are not applied strictly by the rest of the organisations"*. Moreover, interviewee E2 stated that there is a *"weakness in responding to disasters from other organisations**,** such as services and security organisations"*. While interviewee E11 pointed out the "varying periods of time in response to a disaster from other stakeholders who relate to the response process". Interviewee E14 added that there was *an "**overlap in responsibilities with other departments**"*. This is supported by interviewee E13, who highlights the *"**intersections that occurred between the executive authorities** (civil defence) and local governments in the provinces"* as a weakness of the planning stage. These intersections have a negative impact on the planning process and plan implementation when responding to any disaster. So the General Directorate of Civil

Defence has some weaknesses regarding coordination between organisations. The following is a review of another point of weakness, which is education about disaster risk.

4.3.1.3 Education about Disaster Risk

The third sub-theme in planning weaknesses is the education of staff and the public. In disaster situations, education is an integral part of the planning and provision of the humanitarian response, as lives can be sustained and saved by providing quality education. Such education can give physical, psychosocial and cognitive protection to learners. Regarding **public education**, in addition to what is maintained in Section 4.3.1.1, interviewees E3, E4, E9, E10, E13, E16, and E20 emphasised that lack of citizen awareness is one of the common weaknesses during the planning stage. E7, E16, and E17 agreed with the aforementioned interviewees that there is a lack of awareness of the need to give way to fire engines. Moreover, interviewee E17 added a new reason for the lack of public awareness, as follows: *"The subject of civil defence is not covered in the curriculum as it was in the past".* As a result, based on interviewee E4's responses, citizens' awareness has a significant effect on the planning process, particularly with respect to Civil Defence. Such awareness makes implementing plans very difficult in reality.

In the case of **staff education**, there is a lack of internal and external courses and practices (E3, E10, E17, E18, E20, and E25-E28). Thus, *"Knowledge about work and how to deal with orders and instructions is absent",* as interviewee E11 mentioned. Moreover, it might reduce the possibilities for staff gaining knowledge and exchanging information and experience from other countries. Nevertheless, E3 and E18 pointed out that those specialised courses in the field of planning are very rare. As a result, there is a *"weakness of schematic awareness and experience of associate members and leaders (E3)"*. Interviewee E20 has another opinion about the failure of exercising the national plan to respond to disasters. Interviewee E20 adds that one of the challenges facing the planning stage in terms of staff education is *"the failure of staff being educated about the importance of periodic maintenance of machines and equipment".* This failure causes delays in the implementation of the plan, thus, education becomes an integral part of the planning, collaboration and coordination process, between educators and other disaster sectors. It is vital that there is an adequate collaboration so that delays are minimised and in turn, an effective response is provided. Within the same context, interviewee E12 highlights an important point about *"lack of development of junior managers"* as a weakness of the planning stage. This subject is important for several staff, who suffered from negligence and marginalisation because of favouritism and influence of relations with political parties. These effects are among many obstacles faced by employees who wish to develop; especially

those who have the ambition to complete their education, to be, for example, a senior planner in the future. Interviewee E12 explained that *"staff members are only allowed to complete their postgraduate studies after obtaining approval that is affected by nepotism and political parties"*. Within the same context, interviewee E3 added another point of weaknesses: *"Despite putting obstacles in front of the scientific development of the employees, such as the age requirement for them, a lot of employees have the ambition to complete their studies despite the lack of encouragement from the key officials".* Yet, educating learners is an essential component in terms of providing an effective response.

4.3.1.4 Endowment of Equipment, Tools and Infrastructure

In order to meet the disaster response demands, resources including personnel, materials, equipment and facilities should be identified in the planning process. If equipment, tools and infrastructure are not considered in the planning stage, then the response is likely to be weakened. Despite this, there is a shortage in a lot of heavy rescue equipment and infrastructure of the Directorate of Civil Defence and its branches distributed in the country, because of a lack of planning. According to interviewee E7, there is a *"limited capacity and supply for the civil defence, such as a lack of boats, aircraft, and heavy rescue equipment and limited only on light rescue equipment"*.

During the planning stage, *"The **lack of heavy rescue equipment** (E6, E17, E19, E20, and E22-E28)"* is considered an important weakness for this stage. Interviewee E19 attributed this failure to having heavy rescue equipment during responding to disaster to *"late arrival of the supporting rescue mechanics from relevant departments"*. While E6 and E17 assert that there is a dearth of personal equipment and individual kit to staff members. In addition, there is no update to existing gears (E12) as well as there is an *"absence of modern equipment and means such as aviation"* (E1, E18). E19 has the same opinion about the absence of modern equipment and *"equipment for risk assessments when the event occurs"*. E16 agree with E1, E18, and E19 views as follows: *"there is a lack of modern and effective devices to detect explosives"*. *"Deactivation of the GPS system in rapid response to the incident"* is one of the planning weaknesses that are appeared in interviewee E19 responses. Interviewee E17 agreed with the latter view by stating *"failure to provide the mechanisms of modern technology such as GPS system"*. Interviewee E17 also criticised *the "outdated communications devices and there is no regular maintenance for them"*, whereas, E3 pinpointed the need of "*sophisticated software in the field of planning"*.

A quicker response is promoted by careful planning, particularly planning for civil defence infrastructures or centres, since there has been urban expansion and population growth in the past 15 years in Iraq. The civil defence infrastructures often do not meet the needs of many areas in the country. Interviewees E12, E18, and E20 have the same view about the scarcity of civil defence infrastructure. As interviewee E20 mentioned, *"Lack of civil defence centres compared to population density"*. Interviewee E18 added there is a *"**lack of infrastructure** to some areas in the Iraqi province"*. This is due to increase population density and urbanisation.

Regarding the fire nozzles network, because of the outdated fire nozzle network maps, some of these nozzles are not visible – they are sometimes buried in the ground and there is a lack of awareness of them. It is, therefore, important to have access to an up-to-date fire nozzle network, and this relies on the planning being current. E4 mentions this aspect in his responses, as it suffered from *"buried, weak water pressure, **lack of fire nozzles network**"*. Though E12 sheds light on an important point regarding this aspect, the *"unsuitability of fire nozzles' network for vehicles water hoses"*. In fact, water organisation installed new networks, but sometimes these do not work properly due to weak water pressure or unsuitability of the network for vehicles' water hoses, for example. This means that disaster response planning cannot rely on this network and do proper planning of activities for disaster response. Such an essential aspect might make the plan impracticable and this, in turn, has a negative effect on the response process.

One of the fundamental principles of response that planners should recognise is minimising the amount of operational detail that restricts response flexibility. Periodic maintenance of the equipment and devices is shown by experts as the operational detail that restricts response flexibility. Interviewees E12 and E3 have the same opinion of *"**lack of periodic maintenance** of the equipment and devices"* and it *"is limited to remedial maintenance only"*. Though interviewee E17 pointed out spare parts' aspect and mention it in his responses: there is *"weakness in equipping spare parts for the individual prevention equipment as well as mechanisms"*.

4.3.1.5 Financial Resources

Disaster response planning comprises the allocation of resources, especially budget and personnel. Budget allocation should be commensurate with the role of every department within its jurisdiction. Interviewees E1, E15, E17, and E25-E28 have the same opinion on the size of the budget and the limited choices about how to allocate the budget. Interviewees E3, E4, E10,

E12, E17, E18, E20, and E25-E28 agree that there is a **failure in budget allocation and mobilisation**. According to interviewee E12, *"The ability to financially allocate resources is inadequate"*. In addition, interviewees E4, E17, E20, and E25-E28 shed light on items that are not covered in the budget allocation e.g. kerosene for generators, and printing of important booklets and leaflets. Interviewee E3 agreed with E18 that the *"lack of financial resources and the power to allocate such resources effectively led to the failure to implement some of the tasks included in the plan, which had negative effects on the speed of completion of duties".* Interviewees E2 and E21 emphasised that after obtaining approval for the financial allocations to an emergency budget, there was also the problem of *"***limiting the choices made in emergency allocations***"*. Meanwhile, interviewees E6, E14, and E22-E24 cover other financial problems, namely, overtime, transportation, and danger **allowances** not being paid to staff. Due to this problem, staff might not fulfil their roles according to the plan.

4.3.1.6 Lack of Schematic Specialist Staff

It is widely acknowledged by most of the experts E3, E6, E14, and E17-E28, that the lack of staff is considered to be a huge problem in the Iraqi General Directorate of Civil Defence when compared with the annual planned staff number (E3). Interviewee E3, who is the director of the Planning and Follow-up department, emphasised the *"lack of schematic specialist staff"*. Interviewee E3 went on to assert that there is a *"**lack of specialised staff in the field of civil engineering and statistics**"* within the planning department. Similarly, interviewee E20 confirmed that there is a *"**lack of specialist and ordinary staff, especially divers and engineering staff**"* in the directorate. According to interviewee E17, new civil defence centres have also suffered from staffing shortages. Staffing shortages are attributed by interviewee E18 to *"ill-considered decisions that adversely affect the implementation of the plan"*.

4.3.1.7 Planning Process

To conduct a proper evaluation of the planning process for the current administrative system and response practices, it is necessary to identify the negative points of this process. Through interviewees' responses, a number of weaknesses have been identified. Regarding the plan implementation, according to interviewees E1and E10, *"**sometimes the plans are unenforceable and cause confusion**"*, whereas interviewees E3, E8, and E14 agree that there was a *"**weak implementation of the plan** by stakeholders"* or, *"the plans are not strictly implemented"* due to the *"**lack of understanding of what has been planned**"* (E3). In addition, interviewee E8 stressed some important weaknesses in the planning process such as: *"some plans are unrealistic", "some of the plans lack professionalism" and "plans are affected by*

personal views and jurisprudence of the decision makers". Interviewee E13 also states that there is a *"lack of prior planning"*, while Interviewee E12 points out a *"failure in adopting long-term plans"*. Moreover, interviewee E8 pointed out the *"**ignorance of the importance of planning**"* by key officials, besides the fact that *"**some plans are unimplemented**"*. Interviewee E10 also shed light on the area of amendments of the plans, as he believes that the *"**authorization of amendments to the plans is limited to the General Directorate of civil Defence only**"*. However, the planning departments in all Iraqi cities do not have the authorisation to amend the plans. Likewise, interviewee E11 added that there is a *"**lack of seriousness in dealing with research and reports** submitted by officers and staff members in order to develop the work, remove the obstacles, and add new things"* as well as there being a *"**lack of feedback and acceptance of the officers' and staff members' proposals**, which leads to despair and frustration for them"*. This point was also supported by interviewee E12 who saw this from the operative point of view: *"**Adequate opportunities are not given to junior managers in planning**"*. Interviewees E13 and E14 attributed these negative points to a *"lack of unified decision making"* and a *"multitude of decision-making sources"*. Interviewee E13 added other reasons such as *"**inefficient decision-making with respect to planning** as a result of the unstable political situation in Iraq", and "**the central leadership of the ministry is not competent** (Army competence)"*. The latter explains this point of weakness more by stating: *"Due to inefficiency in decision-making, most orders issued are inapplicable"* also *"**things are requested outside the scope of work**"*. Interviewees E3 and E13 confide that *"**delay of correspondence**"* and *"**bureaucracy**"* lead to *"deficiencies in the implementation of the planning procedures, such as the lack of documents on land ownership for the civil defence centres"*. Within the same context, interviewee E13 added that *"a large part of correspondence within the hierarchy, from the top to the lower level, is not feasible or beneficial and implementing it is just a waste of time and effort"*.

To obtain a flexible response to a wide range of disaster scenarios, generic plans for evacuation and shelter should be developed. Within this context, interviewees E2, E17, E21, and E25-E28 brought up a new weakness point for the planning process regarding public shelters, saying that there was a *"**lack of planning for public shelters**"*. Interviewee E17 explained that there are basically no public shelters in any Iraqi cities except in the capital city Baghdad, and these shelters have suffered from neglect. Interviewee E17 declared that the General Directorate of Civil Defence and all its branches depend on private shelters in the planning process. Interviewee E2 and E21 added that *"most public shelters in Baghdad are appropriated by only*

a few agencies" which increased the problem in the time of war and during terrorist attacks because of the shortage of such shelters.

It is widely acknowledged that an early warning system affects the success of disaster response operations. Therefore, disaster response planners, in Iraq, try to achieve such an important response function by disseminating early warnings covering all the areas of Iraqi cities. But in reality, interviewees E2 and E21 mention that there is a *"**weakness of the early warning systems**"*. In addition, interviewee E3 added that there is an *"absence of a central alarm system"* and mentioned that *"**the second phase of the early warning system is incomplete,** which is very serious in the case of an emergency"*. Interviewee E3 added that the first phase of an early warning system includes only the centres of Iraqi cities, while the second phase covers all the areas of Iraqi cities. Accordingly, disaster response planners plan to disseminate warnings in rural areas using mosque speakers and ambulance sirens. This might hinder people that are further away – they may not hear the warning sound and thus become more vulnerable.

Public safety, which is the most important societal concern, can be addressed by applying building codes for all buildings. Protection against the threats of terrorism and natural disasters is enhanced by applying building codes to make societies more resilient. However, if these codes have not been enforced by local governments and enacted into law, they will be ineffective. Fire safety codes, for instance, is one of the civil defence requirements that affect people and disaster responders in obvious ways. Ideally, disaster response planners assume all buildings apply these codes, but, in reality in Iraq, the **application of safety standards and construction codes** seems to be weak. Interviewees E7, E12, E20, and E21 agreed that there is a *"weakness in the application of building codes and occupational safety standards in public and private facilities"* (E21). While interviewee E20 stressed the *"failure in following the conditions of safety and security in storage"*, interviewee E7 emphasised the "failure in applying protection and means of safety to some buildings". Interviewee E12 has the same point of view, that there is a *"failure in providing buildings with a fire nozzle network"*. These weaknesses might cause confusion when implementing the response plan, and therefore it might negatively affect the speed of the response process.

4.3.1.8 Road Congestion

It is widely acknowledged that traffic jams are a common obstruction facing the planner and the disaster responder in any disaster event. Globally, disaster response plans have the aim of reaching the scene and responding within few minutes. But in Iraq, this aim is difficult to

achieve because of traffic jams, particularly in Bagdad. This problem of *"traffic jams"* appears within most of the interviewees' responses (E2, E3, E6, E8, E10, E12, E15, and E22-E24). According to interviewee E3, this problem appeared due to the "**defects in urban planning**, especially with narrow streets". Interviewee E20, agreed with E3's view, stating that there is an *"imbalance in the width of streets and alleys"*. Interviewee E11 gave another reason for traffic difficulties: *"passing through some unpaved roads in many neighbourhoods and residential areas is difficult"*. Interviewee E19 supported this view regarding the lack of services, particularly **road maintenance**, by mentioning a *"lack of passable roads to reach the scene because of security blocks and maintenance"*. He added an important point about **security blocks**, which most of the interviewees had to contend with (E2, E3, E4, E6, E7, E8, E9, E11, E12, E17, E19, and E22-E28). Interviewee E17 complained about *"blocking the roads without warning"*. Interviewees E2, E4 and E9 gave a good reason for this problem: *"……a* ***lack of coordination with security agencies****"*.

Furthermore, interviewees E2, E7 and E9 criticised the security authorities for putting up *"a* ***multitude of concrete barriers*** *and cutting off the roads for security reasons"*. Similarly, interviewees E3, E8, E9, and E12 grumbled about security checkpoints as mentioned in their transcriptions. Congestion and security checkpoints cause a delay in the arrival of civil defence teams at the scene. As the researcher looked further into why there is a delay in the arrival of the disaster responders' team at the scene, interviewees E3 and E17 gave an important reason for this: *"****weakness of public awareness which results in not making way for fire engines****"*. This main problem leads to another minor problem: legal proceedings in the case of exposure to traffic accidents (E7, E17, and E25-28). Consequently, the planning processes are negatively affected by these problems and considered a huge challenge facing the disaster response process.

4.3.1.9 Supporting Ordinances

Power allocation is considered one of the important components of disaster planning. To ensure an integrated response, every organisation within the jurisdiction needs to recognise its role when the disaster occurs to avoid conflicts. In Iraq, according to interviewee E21, the present legislative system is too complex. This probably leads to conflicting mandates and overlapping jurisdictions among multiple institutions when responding to disaster. Although the application of the law and regulations is essential for any work, it could be seen that the Iraqi General Director for Civil Defence had some shortcomings in applying some crucial legal points (E19 and E21). According to interviewee E21, there is a *"****lack of clarity in the mechanisms of a***

declaration of emergency *in the disaster areas and legal implications of this announcement"*. Interviewee E21, who has a background and experience in managing the civil defence directorate, added, *"because of the* ***lack of a unified national legal framework for disaster risk reduction and response****, failures in the response happen when various types of disasters occur"*. Moreover, *"****after 2003, the state's structural changes have not been reflected in the laws and regulations of disaster management*** *(powers of the governors, the development of the region, the new ministries such as the Ministry of Science and Technology, Ministry of Displacement and Migration, and Ministry of Environment)"*. However, interviewee E19 raises different weaknesses: *"****Absence of a special civil defence Court****"*. Interviewee E19 briefly explained that *"when sending violators of the civil defence laws to a regular court, some judges have no knowledge of the laws of civil defence, which lead to a confusing process in the prosecution of defaulters"*.

Most of the interviewees praise the new Civil Defence Act No. 44 of 2013. Interviewee E13 is one of them, but he has an operative point of view, stating that *"Act No. 44 is good in theory but in practice difficult to apply"*. While interviewees E4, E14, and E25-28 agreed that after 2003 the deactivation of some laws within this act might cause a lot of problems. Interviewee E4 gave an example on this point: "***Deactivation of the law of teaching the civil defence curriculum*** *and entering it as the curriculum of the Ministry of Education and the Ministry of Higher Education*". This might cause lack of public awareness, which is considered one of the huge weaknesses facing the planner and the disaster responders alike. Regarding organisations' awareness of the laws, interviewee E14 touched on this point as follows: *"There is a* ***lack of awareness of the detail of the law by the various organisations*** *preventing them from working up to their specialisations"*. This leads to a fragmented response capacity. Consequently, more difficulties are experienced during the planning process, and thus this reduces the quality and the speed of response to the disaster. These weaknesses have also appeared due to the bad security situation. These will be explained in the next subsection.

4.3.1.10 Security Situation

In disaster situations, delays of minutes can cost lives and property, and this is compounded in a poor security situation. Therefore, response planners aim to deliver the response within a few minutes. Due to the poor security situation facing the state of Iraq, especially after 2003, the disaster responders and planners in the civil defence directorate have been challenged with a lot of problems. Although interviewee E7 believes that the difficulties in *"the security aspect are particularly in the northern governorates because they are under the control of terrorist*

groups", there are also difficulties in the middle and southern governorates. According to interviewee E8, for example, "*The **civil defence teams are only allowed to enter some sensitive areas** in the country after obtaining a security clearance, leading to delays in response*". In addition, interviewees E1, E4, E12, E14, and E16 asserted that there is a **security breach** because of the lack of modern and effective checking devices and a security camera network.

According to disaster response plans, disaster responders cannot intervene before conducting security checks at the scene. In reality, since there is a lack of such devices, combined with their naturally altruistic nature, they respond without securing the scene, and this can potentially lead to more problems, which causes the response plan to be unenforceable. Interviewee E4 added, *"Because of a security breach due to the lack of effective checking devices, **dual or sequential bombings** were increased significantly"*. Dual bombings are considered the most challenging problem facing both the disaster responders and the planners (E4, E6, E7, E11, E12, E15, E20, and E22-E24). Interviewee E6 attributed this problem to *"the **absence of security sense**"*. While interviewee E15 said that this sheds light on the *"**lack of knowledge about the people who carry out explosions and the time and place of the explosion**"*. Interviewees E22-E24 agreed with the latter view and added that using women, teenagers, the elderly, the disabled and animals, in addition to dead bodies, in the bombings, are another reason for causing this bad situation. Interviewee E11 gave another reason, *"Lack of security sense and awareness of the security men"*. Interviewees E11 and E16 added the **lack of seriousness of the local police in excluding citizens from risk sites** and emptying the arena for the civil defence team to work comfortably by not imposing a security cordon properly. Interviewee E20, on the other hand, provided a different reason: *"ignorance by citizens as to the seriousness of the situation so that their closeness to the scene is exploited by suicide bomber terrorists"*.

With regard to roads being closed by the security authorities, interviewees E2-E4, E6, E7-E9, E11, E12, E16, E17, E19, and E22-E28 blatantly admitted that closing the roads because of the security situation impedes access to the scene as soon as possible. In addition to what is mentioned in Section 4.3.1.8, placing a lot of concrete barriers and checkpoints challenged the smooth passing of the Civil Defence vehicles. All these weaknesses might hinder the planning process. Disaster response planning is based on assumptions, yet assumptions that are affected by a security breach are difficult to predict. This will negatively affect the effectiveness and efficiency of the plan.

4.3.1.11 Unplanned Random Development

Urban and regional planning provisions should be taken into account by planners when planning for a disaster response, particularly concerning the dangerousness of the place and the location of critical facilities. It is widely considered that random development is a major problem facing the planning process when responding to a disaster event (E9, E12, E11, E16-E20, and E25-E28). Different points of view were revealed from interviewees' transcriptions, starting with *"**random housing, shops, and poor urban planning**"* (E17), which makes accessing the scene very difficult and takes a lot of time. Consequently, this situation will hinder the planning process to meet the global standard time to respond to a disaster (eight minutes). Interviewees E9, E11, E16, E18- E20, and E25-E28 suffered from the same problem and agreed with the aforementioned view, stating that there is *"random misuse of the road's forbidden hard shoulder"*, and there is also *"random construction of housing and factories"*. Interviewee E11 stressed *"the existence of random residential complexes that do not have a regular route network"*. In the same way, interviewee E18 shed light on the *"abuses taking place on the main roads and markets",* especially from street vendors. Interviewee E19 also mentioned the same problem in his transcription, *"a **lack of passable roads to reach the scene**....."*, while interviewee E9 emphasised, *"places of random street vendors, especially in the markets"*. Interviewee E20 raised another challenge, which is the *"**random storage of materials**"*. This problem costs the civil defence directorate a lot of effort as well as responders' lives.

As far as programmed blackouts are concerned, interviewees E11, E17, E18, and E25-E28 highlighted this complex problem by stating that the *"**programmed cutting off of National Electricity"*** (E17) causes a lot of *"excesses on the national electricity grid"* (E11and E18). Programmed or frequent blackouts are considered the main challenge facing the planner and the disaster responder at the same time. Because of the misuse of the national electricity network and the resulting obstructions, fire engines cannot access the scene safely, smoothly and quickly. This also causes a lot of minor problems, such as **unauthorised electricity wiring**, especially for Simi-Generic Generators, that prevents the prompt arrival of civil defence teams at the scene (E9, E11, E12, E16, E17, E20, and E25-E28). Interviewee E22 defined Simi-Generic Generators as *"machines owned by citizens that locally produce electricity. They supply neighbourhoods with electricity depending on the possible amount of produced voltage. They are operated and supervised by the workers in coordination with the local government, which is responsible for determining times of operation and the amount of money paid by citizens in exchange for providing them with electric power when the national electricity has*

been cut off". From Figure 4.2 it can be clearly seen that there is chaotic wiring, especially near these generators, and this is considered a huge challenge facing the civil defence teams when responding to an emergency event, as fire engines cannot access the scene safely, smoothly and quickly, therefore, the response team cannot implement the plan strictly, particularly in terms of time and safety.

Figure 4.2 Simi-Generic Generator

To conclude, these subsections have reviewed the planning weaknesses for planners and disaster responders during the planning process. Figure 4.3 shows the sub-themes of planning weaknesses. In the section that follows, planning strengths sub-themes will be discussed.

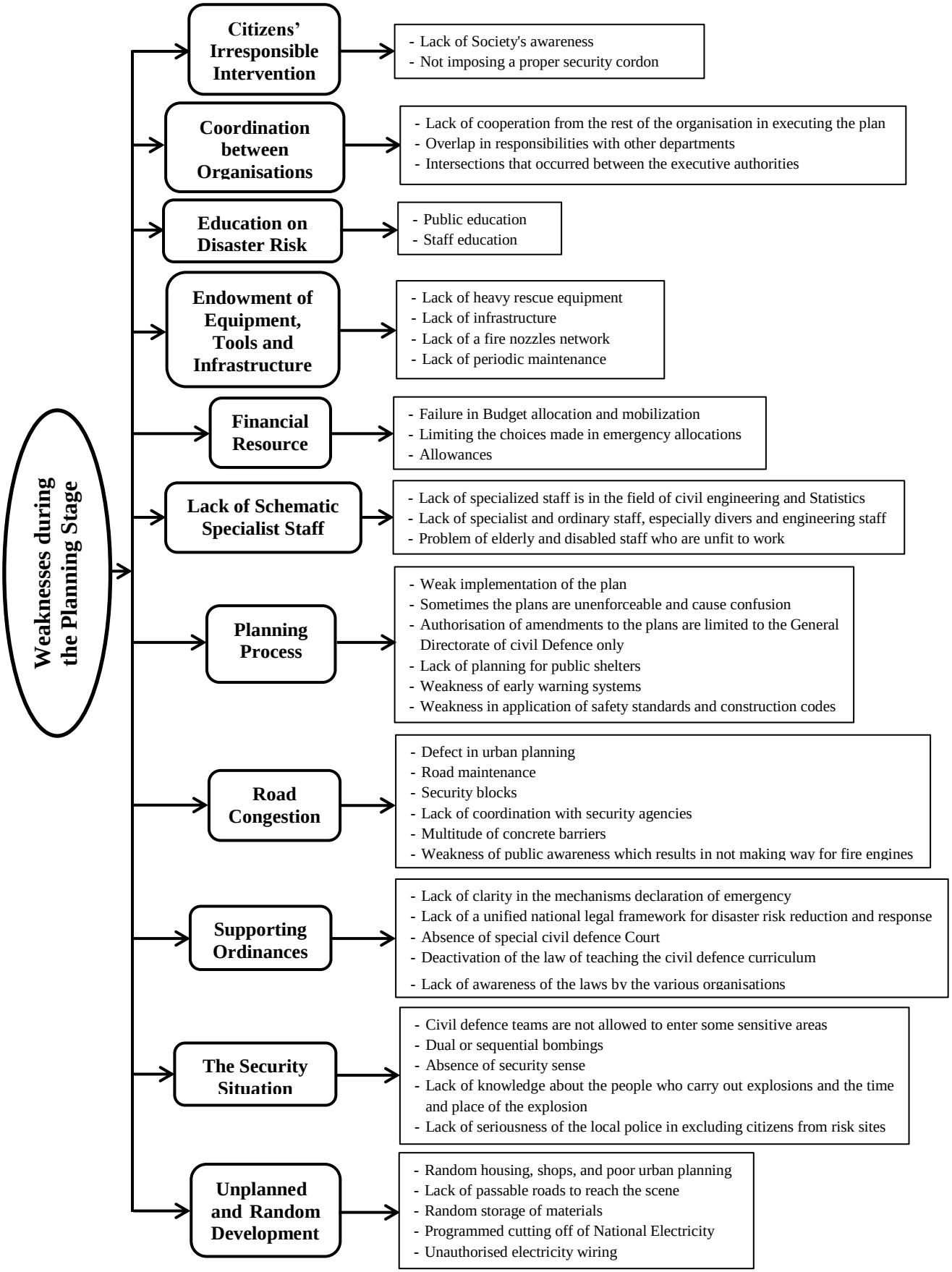


Figure 4.3 Weaknesses during the Planning Stage

4.3.2 Strengths during the Planning Stage

To obtain a whole picture about the current Disaster Response Administrative System, points of strength in the planning stage were revealed from interviewees' responses, as illustrated in Figure 4.4 below.

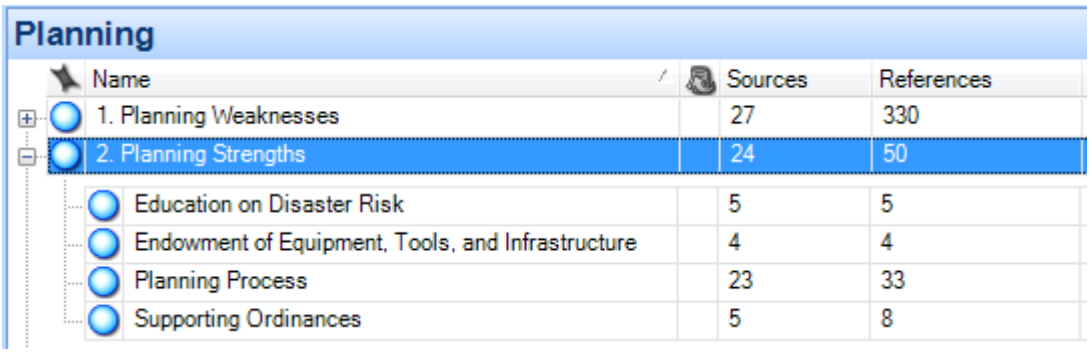


Figure 4.4 Nodes for Planning Strengths

4.3.2.1 Education on Disaster Risk

Education about disaster risk is one of the important subjects which should take priority in the planning process. Within the context of the Iraqi General Directorate of Civil Defence, there are a lot of *"ongoing sessions within the specialities"* (E16) and *"**specialised courses**"* (E20) for the employees of the directorate to deal with different kinds of disasters. Regarding the practices, according to interviewee E10, *"**carrying out prior practices**"* are considered as one of the strengths in the planning process. Interviewee E21 agrees with this point and added, *"Practices exist, although they are differentiated to deal with the disasters in the provinces"*. Self-protection teams for each organisation, on the other hand, have a good opportunity *"through their participation in training courses (4 sessions during the first half of the year and 4 sessions through the other half of the year)*" (E4). Consequently, **self-protection teams' rehabilitation** was a continuous process during the year. Self-protection teams mean a team consisting of a group of volunteers working within the organisation to respond to any incident as fast as they can. An effective planning process recognises the importance of volunteer team workers, therefore, this point is considered one of the strengths in the planning process from 8 interviewees' perspectives.

4.3.2.2 Endowment of Equipment, Tools, and Infrastructure

It is widely acknowledged that the implementation of plans cannot go ahead without the prior preparation of equipment, tools, and infrastructure. Interviewee E13 confirmed that

*"**equipment and devices are very good so that disaster response planning can rely on the equipment and do proper planning of activities for disaster response**"*. In the same way, Interviewee E16 stated that *"the directorate have **modern and fast vehicles**, similar to developed countries in the world"*. Meanwhile, interviewee E10 argued that to support the planning process, *"**preparing tools for the implementation of plans**"* is the first priority for the directorate. In addition, interviewee E3, who is the Director of the Planning and Follow-up Department, spoke of the *"**existence of support for civil defence directorates' infrastructure** through building modern headquarters, civil defence centres and strategic stores"*. It can be seen that the directorate supports the planning process with equipment, tools, and infrastructure.

4.3.2.3 Planning Process

As the research looked further at the points of strength in the planning process, an expert, E3, who has experience and some background in planning, gave a clear indication that *"the Directorate have **proper planning**"*. Interviewees E10 and E19 agree with this point. Interviewee E3 added, *"**Plans are developed with clear visions, goals, objectives and tasks**"*. Interviewee E8 agrees with this point and added, *"There is a **continuous work in planning** to develop, modernise, and bring plans from countries with experience"*. Interviewee E18 points out that *"the **plan is applicable and realistic,** attributable to applying it after consultation with the rest of the departments within the directorate"*. Moreover, interviewee E3 acknowledged *"the **existence of a general contingency plan and sub-plans** in the departments of civil defence in the provinces"*. On this point interviewee E21 asserts: *"Vigorous efforts exist to secure a **national contingency plan for some specialised types of disasters** such as radiological, chemical, and biological emergency plans"*. This point was also supported by interviewee E7 who stated that *"as a result of terrorist acts in the north of Iraq, a general plan was developed for disaster prevention in case the dams collapse"*. Regarding this specific case, interviewee E7 declared that *"currently, the Ministry of Defence in coordination with the rest of the ministries and relevant organisations are responsible for implementing this plan"*.

Regards updating the plans, interviewees E10, E12, E14, and E16 mentioned this advantage in their responses. Interviewee E16 emphasised that the *"...**plan is updated annually**"*. Interviewees E10, E12, and E14 agreed with this point and added that plans are updated annually so as to benefit from the mistakes of previous plans. Similarly, interviewee E10 supports this point: *"the plans are placed, adjusted, and prepared annually so as to benefit from the mistakes in plans of previous years"*. Interviewee E12 added that experts *"analyse*

the accidents and take feedback, especially after large disasters" to take advantage of them during the planning process.

Further, interviewee E6 confirmed that *"planning is good as a result of the accumulation of experience and availability of staff"*. The interviewees E12, E14, and E15 also gave the same reason: that **planners have technical and academic expertise** as well as *"experienced and efficient planning staff who have an extensive practical* experience and an accumulation of experience."

Moreover, interviewee E11 boldly gave his response that *"**the information is followed-up and updated from time to time**"*. Interviewees E4, E16, E17, E20, and E25-E28 agree on the same point in their responses: *"**Periodic inspections existed for organisations and facilities**, especially the important ones, and an examination of the extent of their application of the safety and security requirements" (E26)*. Interviewee E20 pinpointed one of the most important strengths during the planning process as follows: *"**full knowledge of the geographical area of each civil defence centre** (labs, hospitals, departments, etc. .....)"*. Interviewee E20 clarifies this point: *"**the classification of infrastructure for each geographic area** is done according to their importance (A, B, C). Periodic inspections of these structures test for the application of safety standards and the readiness of backing teams or self-protection teams to respond to the disaster"* (see Section 4.10.4). Interviewee E16 supported this point and believes that *"ongoing visits to these projects and inspecting them about the extent of the application of safety standards, is considered one of the advantages of the planning process"*. Further, interviewee E4 clarified the number of times for this investigation every year. This view is expressed by these responses: *"**conduct inspections for the geographical area to each centre every six months**"*, *"a semi-annual inspection of emergency supplies and entrances to buildings"*. Experts stress that all these inspections are essential to implement the plan strictly.

4.3.2.4 Supporting Ordinances

Interviewees E3, E4, and E7 believe that the *"**adoption of the Civil Defence Act No. (44)** for the year 2013 and decisions on the management of acts of civil defence in emergency situations and large accidents"* is considered a major advantage for the planning process as functions and delegation of responsibilities to all staff is prescribed in it. This point was also supported by interviewee E13, who sees this from the operative point of view, *"The new Civil Defence Act No. 44 of 2013 is good in theory but in practice difficult to apply"*. Similarly, interviewee E21 mentions, in the same context but in a general way that despite *"the existence of laws related*

to disasters such as the Civil Defence Act and the Public Health Act", there is a *"lack of a unified national legal framework for disaster risk reduction and response"*. Interviewee E3 added another strength, *"The existence of special task contexts in Iraq (**work guide of civil defence centres**)"*. Further, interviewee E4 puts emphases on the *"**final update of the Civil Defence Act No. 44 of 2013**"*. Interviewee E7 highlights as a strength that *"**creating a particular civil defence Court**"* in Baghdad serves to decrease the amount of correspondence and ensures the prosecution of offenders of the civil defence instructions. Interviewee E21 adds another point related to *"the **existence of codes of Construction and Safety Standards**"* to ensure the application of safety and industrial requirements for public and private facilities as well as to make society more resilient. By applying building codes, protection against the threats of terrorism and natural disasters can be enhanced. Interviewee E7 also mentioned the *"**activation of the closing down law related to facilities, projects and shops that violate the safety and industrial requirements**"*. The Closing Law is one of the laws within the Civil Defence Act No. 64 of 1978, but it was deactivated after 2003. Accordingly, it can clearly be seen to be applying the law strictly, disaster responder can implement the plan smoothly and flexibly. Therefore, it is considered a major advantage for the planning process.

This section has discussed the four themes of strength for the planning process. From this discussion, various sub-themes have been revealed as shown in Figure 4.5. The next section will debate the weaknesses during the planning stage.

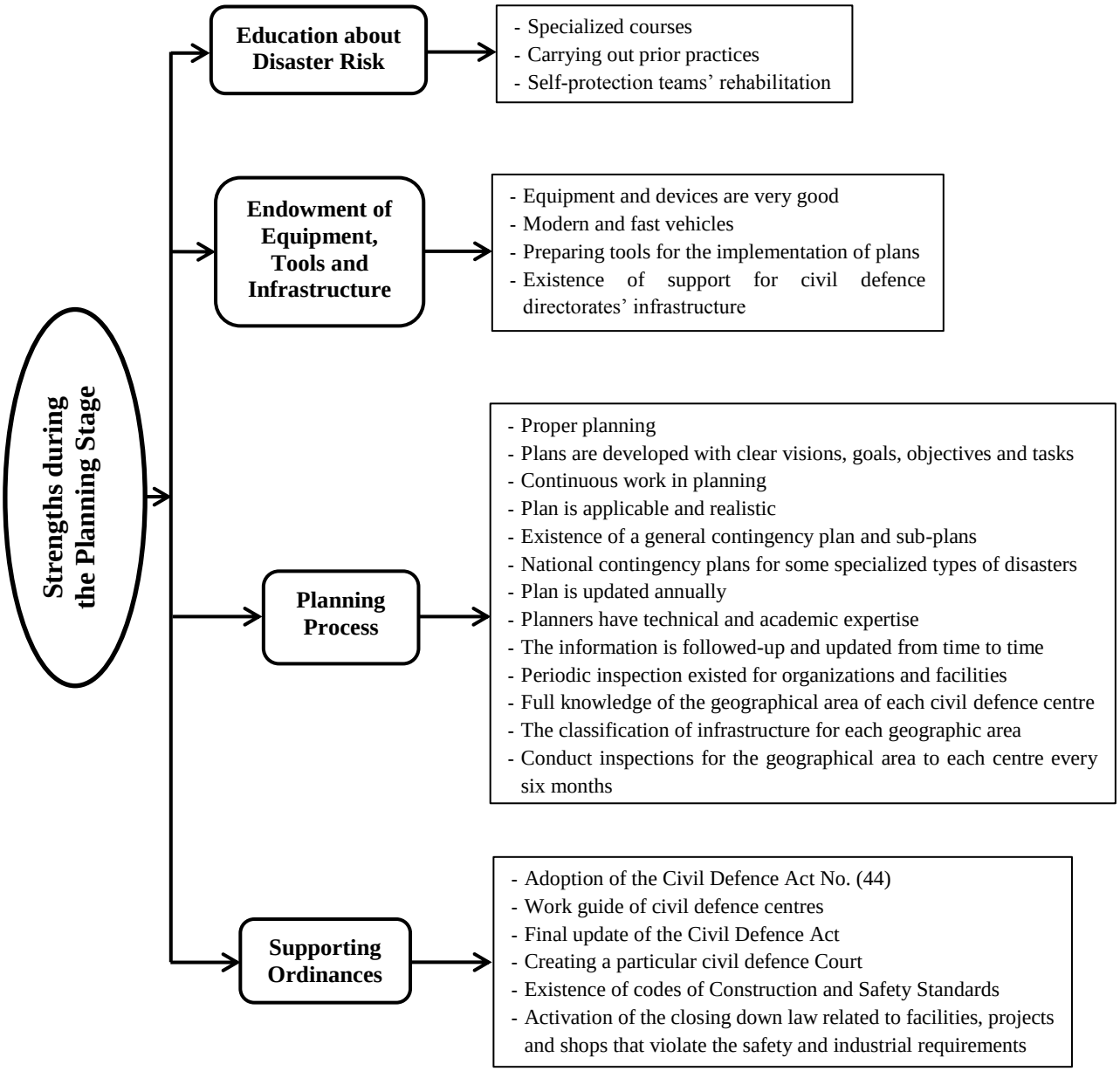


Figure 4.5 Strengths during the Planning Stage

4.3.3 Recommendations for the Planning Stage

To complete the evaluation process for the current Disaster Response Administrative System planning stage, and after determining the points of weakness for this stage, a set of recommendations were revealed from the responses of the interviewees. These recommendations have been categorised into sub-nodes as listed in Figure 4.6 below:

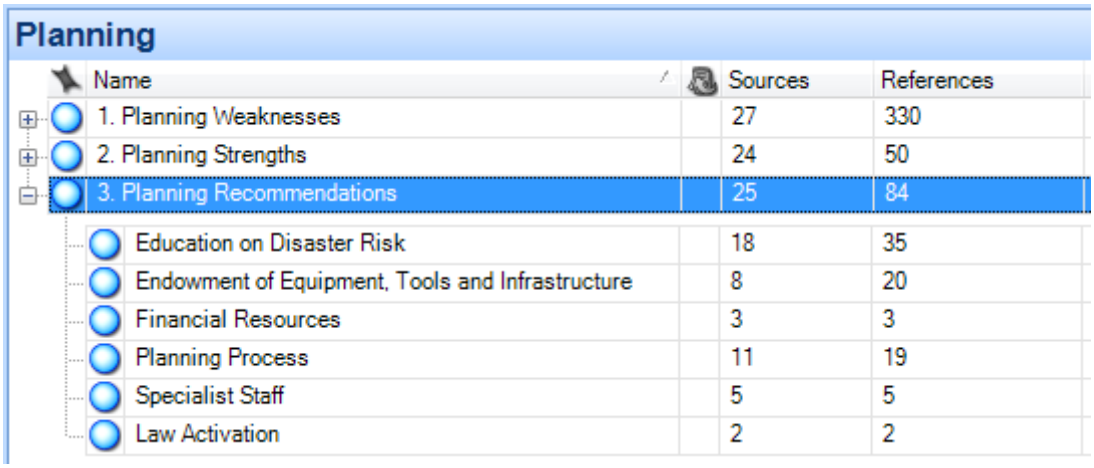


Figure 4.6 Nodes for Planning Recommendations

4.3.3.1 Education on Disaster Risk

It has commonly been assumed that good educating and training might lead to improve preparedness and response at all levels before during and after disasters. Moreover, the capacity of staff and community could be built and fostered by doing so. According to interviewee E21 *"**building and strengthening the institutional capacity for preparedness and response from the potential risks**"* is essential when the disaster strikes. In order to gain proper planning, experts stressed the importance of education for both the staff and public. From the recommendations obtained from the experts' own experience, courses in the field of planning are suggested by interviewees E3 and E18. This can be seen by these responses: *"**Intensify external training courses in the field of planning**"* and *"schematic staff contribution in external courses in the field of planning"*. Similarly, interviewees E3, E8, E15, E17, and E25-E28 stressed **attending internal and external courses** and focusing on attending external courses in order to transfer experience and knowledge as well as to deal with the modern techniques in responding to the disaster. Moreover, because of bureaucracy and nepotism, the external courses are limited to high-ranking officers and staff. Therefore, interviewee E3 recommended *"**involving the intermediate and lower staff in courses outside Iraq**"*. Interviewee E19, on the other hand, proposed another idea; *"**Conducting studies and research in the field of planning relying on previous experiences and global research**"*. This would

enhance the planning process. Interviewee E6 went on to add a suggestion related to *"**continuous training for staff**",* where planning and the responding process could be further improved. Interviewee E19 agreed with this suggestion and added: *".....**conduct joint exercises for the plans with the relevant organisations**"*. In a similar way, interviewee E6 proposed *"**carrying out field practices** of the different incidents in order to determine the pros and cons of implementation and thus address the negatives"*. Interviewees E11, E22, and E25 support this view by stressing on field practices due to their importance in supporting teamwork and providing a response in a coordinated manner.

To ensure community safety during disaster, skills and provisions for disaster preparedness and response can be developed by providing a comprehensive education over generations. Such development could be achieved by *"**increasing community awareness and involving civil defence material in curriculum**"* (E9). Interviewees E8, E16 and E19 agreed with these recommendations, stating the necessity of *"educating the public"* by *".....including a civil defence syllabus in the curriculum of schools and universities"* and *"preparing a community education programme as a support"*. Moreover, interviewee E21 highlighted *"**training and dissemination of knowledge about risk management**",* also *"increasing awareness of the risks through education in all its stages"*. Further, interviewees E8, E19, and E21 emphasise **continuous communication with the public to raise awareness of the threats of risks** and the dangers of approaching the scene, which is necessary to avoid the dangers of the sequential bombing. Interviewee E20 agreed with the aforementioned view and raised a new important point in terms of using media in community education to **raise awareness about the role of civil defence** during the responding stage. Additionally, interviewee E21 put emphasis on *"disaster preparedness at the community level by focusing on the community safety behaviour and practices", "apply education, knowledge and innovation techniques to build a safety culture among the public to enhance the ability to deal with disasters at all levels", and "**ensure broad local community participation (tribal - religious - other civil society organisations) in preparedness and response to disasters**"*.

4.3.3.2 Endowment of Equipment, Tools, and Infrastructure

In this section interviewees E3, E6, E16, E18, and E21-24 highlighted the importance of **using sophisticated equipment and mechanisms**, **special heavy rescue equipment** (such as shovels, excavators, etc.), equipping with modern planning equipment such as a fast internet system, and **linking the directorates of civil defence with the e-government network**. Interviewee E21 pinpointed an early warning system in his recommendations, stating the need

for *"securing **effective early warning systems** for different threats, such as radiological, chemical, and biological weapons"*. Moreover, interviewee E3 put emphasis on *"**maintaining the planning of special supplies**"*. Interviewee E18 highlighted another suggestion, stating that he would like to see the *"**set up of fire nozzles and a security cameras network within the required technical specifications**"*. In addition, interviewees E6, E18 and E22-E24 had the same opinion, by proposing the **increase and modernisation of civil defence centres** within the scientific criteria for distribution according to geographical area and population. So that disaster response planning can rely on such civil defence centres and do proper planning of activities for disaster response.

4.3.3.3 Financial Resources

To implement the plan properly, *"**resources should be accurately estimated"*** (E1), as well as that *"**adequate financial resources should be allocated"*** (E12). Moreover, to enhance and encourage all the employees in different departments within the directorate to do their roles that are allocated in the response plan, *"**danger allowances** for each employee of civil defence classes should be allocated"* (E19). According to interviewee E19, *"a danger allowance is the amount of money allocated to the employees of the Ministry of Interior who work within a hot spot (hot spot means the vulnerable areas that encounter the risk of terrorism and include north of Babylon, Baghdad, Diyala, Kirkuk, Salah AL-Dien, Al-Anbar, and Ninawa)"*.

4.3.3.4 Law Activation

It seems to be responding to disasters is a shared responsibility between the responders and community. Therefore, law enforcement might have vital roles in responding to disasters such as being first responders in disaster incidents and providing the community with safety and security. As such, interviewees E4 and E14 put emphasis on *"**activating the decisions of the civil defence services under Law No. 64 of 1978 amended by Act 44 of 2013,** which are applicable so far"* due to the importance of the commitment to such a law when implementing a response plan.

4.3.3.5 Planning Process

To arrange an appropriate action in order to response in an effective and timely manner, response planning processes might be considered as a critical tool which is prepared in advance to solve problems that probably arise while responding to the disaster. To enhance this tool, interviewee E10 stated the need for *"**developing a unified plan to response to the disaster for the governorate**, which includes the participation of all organisations with all its possibilities*

to determine responsibilities, duties, and the hierarchy". In a similar way, interviewees E6, E20, E23, E25 put emphasis on **preparing prior plans to any disaster** and **preparing the elements of the plan** (human resources, modern machine, and infrastructure). Interviewee E23 is of the opinion that *"**increasing the number of civil defence centres** depending on the scientific criteria for distribution according to geographical area and population"*.

In addition to what has been mentioned before, interviewee E8 stress that *"**attention and support for the planning process should be given by the decision-makers**"*. Interviewee E10 added that *"before starting the planning process, **planners should focus on disaster forecasting and monitoring**"*. Interviewee E10 agrees with this suggestion, adding that *"**addressing the negatives occurring after each accident**"* might decrease the margin of error in future planning. However, interviewee E11proposed the idea of providing the planning process with updated feedback from the staff by *"**holding regular meetings with all the officers and staff members** and consulting them about all that would raise the work efficiency, development, remove the obstacles, and find solutions to them"*. This point was also supported by interviewee E12, who sees this from the operative point of view by "***giving opportunities to junior directors to participate in making plans** because they represent the future managers"*.

Regarding the coordination between the authorities and the rest of the relevant organisation, interviewee E18 asserts the point of **ensuring that roads are open for civil defence teams**. This can be seen in interviewee E18's response: *"**There is a need for coordination between the authorities and the rest of the relevant organisations** in relation to roads being open"*. In a similar way, interviewee E6 put emphasis on "removing excesses from the national electricity grid". Interviewee E13 highlights another different point, which can be seen by this response: *"The need to **apply and update safety standards for buildings**"*.

4.3.3.6 Specialist Staff

Many interviewees (E8, E14, E16, E18, and E19) argue that specialised staff are needed in planning departments. Interviewee E18 believes that *"**specialised technical staff in planning should be increased**"*. While interviewee E14 recommends that planning departments should *"**rely on competent and experienced people with academic achievement**, who have been trained through the internal and external planning courses"*. These recommendations are based on the remarkable shortages in experienced and specialised planning staff, particularly technical staff. This shortage might lead to a decrease in the efficiency of the plans.

To sum up, various suggestions have arisen from the arguments in this section. A summary of the planning recommendations' sub-themes is presented in Figure 4.7 below. In the next section, planning stage summary is provided.

4.3.4 Planning Stage Summary

In summary, it can be seen that there are various strengths and weaknesses that have been highlighted in this stage. It is apparent that, in the planning stage, the strengths are also the weaknesses, and vice versa. In the section that flow, interview analysis of the organising stage is presented.

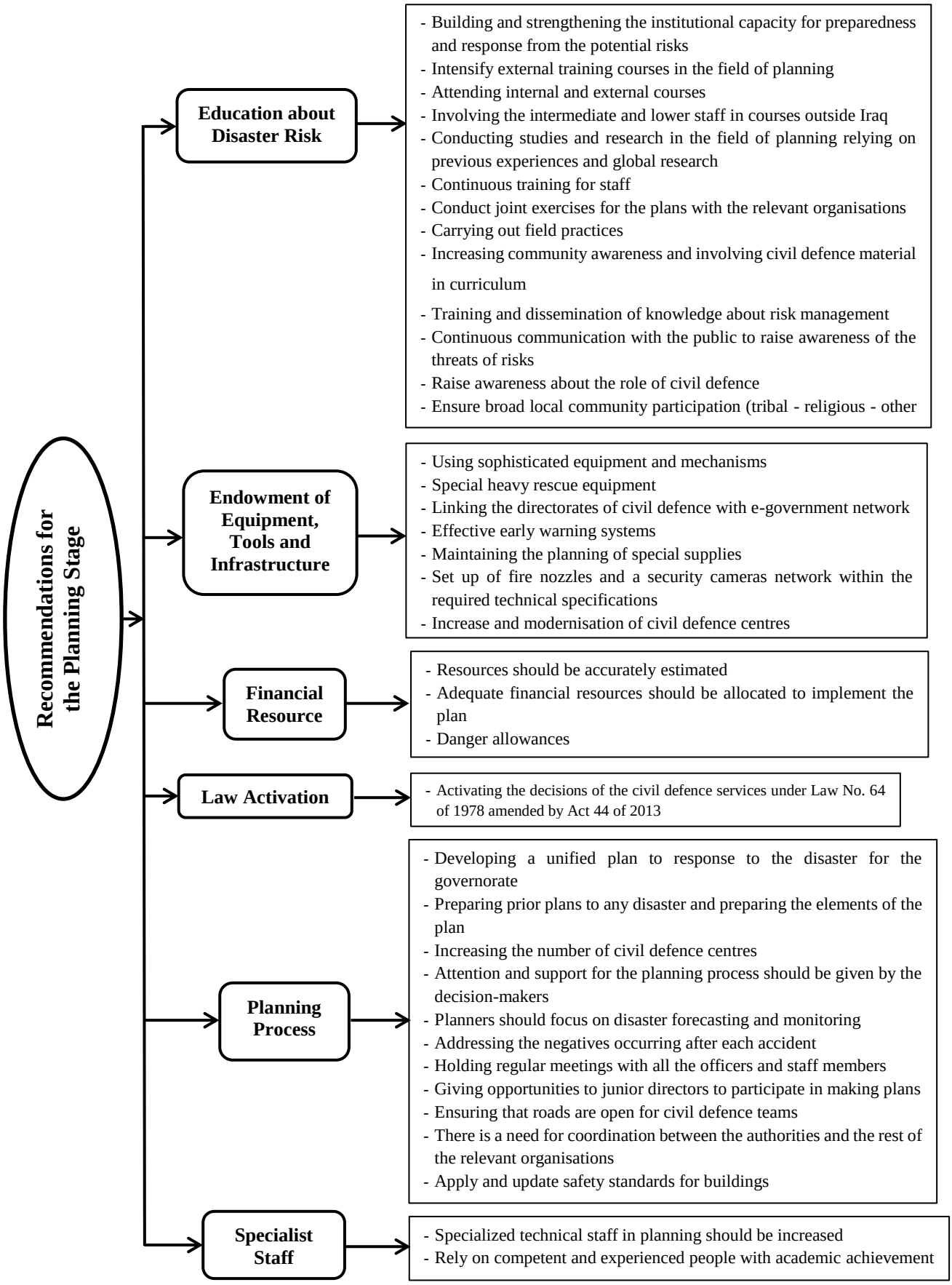


Figure 4.7 Recommendations for the Planning Stage

4.4 Interview Analysis – Organising Stage

As the research looks further at the organising stage of the civil defence administrative system, many sub-themes have been revealed from experts' responses. The following subsections will briefly discuss these sub-themes.

4.4.1 Weaknesses during the Organising Stage

In order to conduct a proper evaluation for every stage of the current administrative system in the Iraqi General Directorate of Civil Defence, extracting points of weakness for every stage is very valuable in order to complete this evaluation. Figure 4.8 below demonstrates the nodes for organising weaknesses.

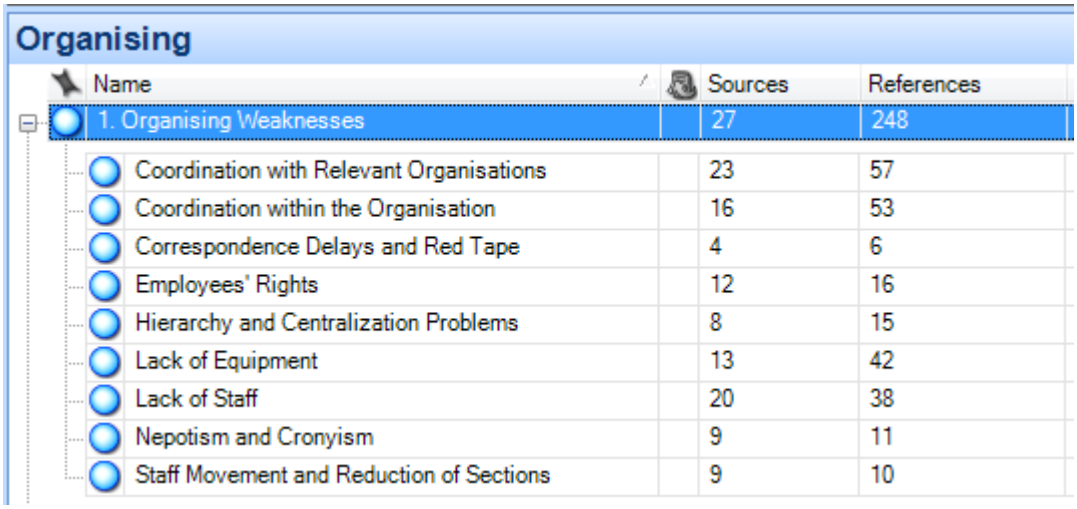


Figure 4.8 Nodes for Organising Weaknesses

4.4.1.1 Coordination with Relevant Organisations

Interestingly, 23 out of 28 interviewees highlighted that coordination between organisations is the most challenging issue during the organising process. Based on interviewee E10's response, there is a *"failure in organising between the directorate and other organisations"*. Interviewee E19 also pointed out *"an absence of cooperation from the rest of the relevant organisations"*. Interviewees E2, E4, E10, and E20 agreed with these views, and furthermore, interviewees E2 and E20 pinpointed the weakness of these organisations in **responding to disaster from other organisations** such as services and security organisations. This failure was explained by some interviewees as follows: *"**The multiplicity of responsible agencies at the scene**, especially from the rest of the organisations such as security and police"* (E4), also, *"**Failure in the implementation of other organisations"*** (E4), *"**Plans not being applied strictly by the rest of the organisations"*** (E14), *"Failure to apply the security cordon properly"* (E19),

*"**Intervention by the senior leadership of other organisations"*** (E13), and a *"**Lack of knowledge of the objectives, tasks and duties of the rest of the organisations"*** (E20) . Interviewee E16 mentioned the same reason: *"Intervention of some organisations without relevant knowledge"*. Interviewees E12 and E13 gave two other reasons: *"**Jobs overlapping with the other organisations at the scene**"* and *"occurring intersections between the executive authorities (civil defence) and local governments in the provinces"*. Moreover, interviewees E6, E11, E19, and E22-E24 determined another outcome of that failure in organising between the directorate and other organisations, namely that the **support from the rest of the organisations is not fast enough when responding to disasters**, particularly when requesting heavy rescue equipment.

With regards to the coordination between the federal ministries and local governments, according to interviewee E21, there is a *"**weakness in the mechanisms of coordination between the federal ministries and local governments** on the subject of disasters" (E21)*. In the case of coordination with donor countries, interviewee E20 argued that: *"The **coordination with donor countries is centralised**. This leads to the absence of any role for the General Directorate of Civil Defence in this regard"*.

With respect to **coordination with the security authorities**, interviewees E2, E4, E9, E11, E17 and E25-28 made a bold statement regarding the closure of roads. This can be seen in interviewees' responses as follows: *"Closing the roads because of the security situation impedes accessing the scene as soon as possible"*, *"Sudden banditry on the roads as a result of lack of coordination with the security authorities"*, *"Blocking roads without warning"*, *"Closing the roads in an informal manner (lack of coordination with security agencies)"*, *"Non-cooperation of the security forces to ensure passable roads for the Civil Defence vehicles by putting a lot of concrete barriers and checkpoints in unnecessary locations"*. Further, interviewees E4 and E12 emphasised the problem of a security breach and gave reasons for that breach: *"Sequential bombings because of a security breach due to the lack of effective checking devices"* as well as the *"absence of a Security Camera network"*.

However, interviewees E3, E4, E11, E17 and E25-E28 mentioned the **absence of coordination with the service organisations**, stating: *"Chaos is caused by service projects cutting off roads without following a defined timetable and thereby producing a lack of safety and security standards"*, *"Absence of a municipal role in the periodic adjustment of roads"*, *"Defect in urban planning, especially for the narrow streets"*, *"A lack of a coding system for buildings"*,

"The difficulty of acquiring land for the establishment of the civil defence centres", *"Programmed cutting off of National Electricity",* and *"Failure to provide buildings with a fire nozzle network",* and even when having a fire nozzle network, these nozzles are unsuitable for vehicles' water hoses.

As discussed above, the organising process had faced different weaknesses with various organisations, which related to the response process, security, services, donor countries, federal ministries and local governments.

4.4.1.2 Coordination within the Organisation

Whilst responding to disasters, *"**confusion and chaos**"* become the dominant picture at the scene, as was interviewee E1's opinion. This situation occurs due to a number of reasons, as interviewees E3, E4, E8, E11, E12, E20, and E21 explained in their responses. They reported *"**some incorrect distribution of tasks**"*, *"accumulated tasks"*, *"overlapping duties which were not previously prepared within the work schedule and will become emergency duties"*, *"**failure of some officials to fulfil their responsibilities*** due to *not putting the right person in the right place"* also because of *"**decentralization of some administrative decisions**"*, *"**absence of employment choices** (because free choice is the foundation of success) and often there is no choice for the concerned person"*, *"**continuous movements from time to time** between the departments and administrative units without any justification or feasibility of these movements"*, *"commissioning staff members with tasks and duties far from their field of work and their specialty"*, *"**the top official's lack of knowledge about the work details of the staff**"*, *"obstruction of the work without rational justifications"* as well as the *"**lack of some flexibility in administrative power during the exceptional situation of disasters at the various administrative levels**"*.

Regarding **commissioning people for important administrative tasks**, the Iraqi General Directorate of Civil Defence has long suffered from this sensitive problem, particularly after 2003. Interviewees E6 and E22-E24 focused on this by stating that giving important administrative tasks to staff with no experience is a problem. Interviewee E4 agrees with an aforementioned view. Further, interviewee E11 has another point of view within the same context, stating that due to the previous *"lack of adoption of standards when accepting new staff members"*, there are *"differences and difficulties in the assimilation of orders and instructions as a result of the different educational levels for staff"*.

Regarding the organisational structure, according to interviewee E8, *"**cancelling or merging branches within the organisational structure** will cause a reduction in work efficiency"*. Interviewee E11 attributed this decrease in work efficiency to the *"lack of seriousness of the heads of administrative units to address the administrative problems"*. Interviewee E3 focused on different points such as *"commissioning planning department staff with duties outside the scope of their work"*, *"a frequent replacement of those who are responsible for planning, is leading to a lack of communication data"* as well as *"lack of credibility by giving, updating and following-up information"*.

4.4.1.3 Correspondence Delays and Red Tape

It is widely known that effective coordination for activities and responsibilities is considered an essential ingredient for disaster response management and to achieve disaster response plans. Interviewees E3, E11, E13, and E20 believe that bureaucratic and administrative red tape are challenged to the administrative system in the directorate. Furthermore, interviewees E3 and E13 highlighted correspondence delays which were deemed to be a major factor affecting the organising process as poor coordination would cause a loss of time. This can be seen by this response: *"A large amount of **correspondence** within the hierarchy, from the top to the lower level, is not feasible or beneficial, and implementing it is just a waste of time and effort"*. Further, such bureaucracy might deter some of the employees to do their jobs to the fullest.

4.4.1.4 Employees' Rights

Employees have rights in their workplace, wherever this may be, and organisations legitimately have processes that aim to establish a structure of working relationships that allows employees to interact and cooperate. Realising such interactions and cooperation, particularly when responding to a disaster, is important for raising morale and general mental health of staff. Unfortunately, the administrative systems in the directorate disregard many important things to allow people to perform the response to the fullest. Interviewees E5, E9, E12, and E21 criticised the **system of daily working hours** for civil defence centres (24 hours on and 24 hours off) which applied from 2007. They added that this system is not comfortable for the staff compared to (24 hours on and 48 hours off). Interviewee E12 described it as *"very exhausting for staff"*.

With regards to **vacations and travel outside Iraq**, interviewee E12 emphasised that *"officers and staff members are not allowed to travel outside Iraq for vacation or for their studies until obtaining approval from the Minister"*. Further, *"Authority to grant any vacation to travel outside Iraq is limited exclusively to the minister's authority and it sometimes takes more than*

a year to get it" (E13). Interviewees E13, E17 and E25-E28 confirmed this point. Interviewee E13 added, *"it sometimes takes more than a year to get the authorization to travel outside Iraq"*. However, interviewee E13, who had a legal background, highlighted an important point in the law of service and retirement of the Internal Security Forces No. 18 of the year 2011: *"Legally, there is a mandatory vacation of two weeks for each staff member with full salary, but this law is not applicable to staff"*. This point caused the interviewees resentment. This could be seen from their body language and the loudness of their voices. Interviewee E3, further, blames the staff shortage problem on not taking enough vacations, especially for directors who have important positions. Staff shortage problems will be discussed in the following section.

Interviewee E13 added another important point which has a negative impact on the psyche of staff as he mentioned in his response: *"It is* ***difficult for staff members to complete the requirements for obtaining postgraduate degrees*** *in various disciplines, as it is subject to bureaucracy and nepotism. Another difficulty is the development of additional conditions such as age requirement"*. This bureaucracy and nepotism might deter some of the employees to do their jobs to the fullest.

In addition, interviewees E4, E6, E9, E11, E12, and E22-E24 highlighted an important point in terms of **health and life insurance as well as periodic medical and fitness examinations**, as mentioned below: *"Lack of health insurance for staff members as well as a lack of attention to the psychological aspects of their health"*, *"lack of health insurance for the staff"*, *"absence of periodic medical and fitness examinations for the staff"*, and *"lack of health and life insurance"*. The researcher noticed that this point generated despair and frustration for the staff through the way they speak about it. Moreover, interviewee E11 raised another point of weakness in terms of staff rights and compensation as follows: *"****Failure to ensure easy and quick compensation and rights for those who are exposed to injuries during the accidents****"*.

Interviewees E4-E6, E14, and E21-E24 pinpointed a bold statement regarding **employees who are unfit to work** (medically classified): *"The existence of the elderly and disabled employees (affiliated within the permanent staffing), who are unfit to work, causes a burden on the Directorate of Civil Defence"; "employees who are unfit to work (medically classified) as class / b and c / II of Article (3) of the physical fitness of the Internal Security Forces Regulation No. 31 of 1980, which is located under the law of service and retirement of the Internal Security Forces No. 18 for the year 2011 p. 214, are considered a burden on the organisation"*. They

added that this problem might increase due to thoughtless transfers between the different branches of the Ministry of Interior, for example, by moving a lot of employees, who are unfit to work, from the federal police department to the directorate.

4.4.1.5 Hierarchy and Centralization Problems

One of the important tasks for organising is assigning groups of essential activities (to achieve response objectives) to a competent manager with authority necessary to supervise it. But at the disaster scene different points of weakness appeared regarding this matter. Interviewees' E3, E11, and E21 felt that a major problem was apparent at the scene of an incident with the **presence of more than one system of leadership** causing a failure to obtain satisfactory results. Interviewees E3 and E21 added, *"….multiple decision-makers from the same organisation and other organisations, at the time of the incident"*. Interviewee E11 pointed out another problem: *"The **lack of consultation with stakeholders in the decision-making**"*.

In terms of **officials' experience and their level of scientific knowledge**, interviewees E3, E4, E6, and E22-24 touched on this point by stating different views such as: *"Lack of understanding of the guidance or orders due to a lack of scientific knowledge"*, *"delegating to unqualified officials with respect to their scientific level of knowledge, experience, and personality"*, *"giving important administrative tasks to staff with no experience"*. Conversely, interviewee E12 stressed, *"not giving adequate opportunities for junior managers in planning"*. However, interviewees E6 and E22-24 shed light on the same point (Section 4.4.1.8): giving sensitive positions to those who have a relationship with political parties in Iraq after 2003. Those people did not have adequate experience and qualifications to implement administrative tasks.

4.4.1.6 Lack of Equipment

To achieve the objectives of the directorate in responding properly to disaster, the organising process aims to coordinate and direct its resources is crucial. Resources, such as equipment, tools, and infrastructure are considered the most significant resources during responding to the disaster in addition to financial resources. With respect to the availability of equipment, tools, and infrastructure, interviewees E6, E7, E17, E18, E20 and E22-E24 repeated their answers, mentioned in section 4.3.1.4, because of the importance of these points from the interviewees' perspective. Further, interviewee E20 summarised all aforementioned points in one comment: *"**Lack of possibilities in terms of equipment, personnel, training, and coordination**"*. Moreover, as the availability of the financial resources has a significant impact on the

organising process, interviewees E10 and E14 also insisted on repeating their comments in Section 4.3.1.5).

4.4.1.7 Lack of Staff

To achieve a strong response to the disaster, coordinating manpower resources is crucial to conduct proper organisation. In addition to what was mentioned in Sections 4.3.1.6, interviewees E3- E6, E8, E11, E12, and E17 -E28 have the same point of view, that there is a **lack of staff compared to the staffing of the official organisational structure**. Interviewee E5, who is a director of administrative affairs, determined that the percentage of the **shortage in the number of staff** within the whole directorate is 40% compared with the official staff number in the annual organisational structure. Interviewee E5 gave the reason for this shortage by stating *"**recruitment doors did not open for new employees for more than three years**"*. This problem appears due to delaying in authorising the updated official organisational structure for more than one year by the key official in the Ministry of Interior. This point was confirmed by interviewees E7, E11, and E21, stating that the lack of staff members is due to the lack of new staff members' recruitment since 2005. Interviewee E18 added another reason: *"Staffing shortage as a result of ill-considered decisions which adversely affect the implementation of the plan"*. Moreover, interviewees E6 and E22-E24 mentioned this reason in their responses as follows: **The existence of the elderly and disabled employees (**affiliated within the permanent staffing) **who are unfit to work (medically classified)** causes a burden on the Directorate of Civil Defence. While interviewee E12 explained the consequences as a result of this shortage as follows: *"the effectiveness of the organisational structure will be affected by staff shortage"*, similarly, interviewee E3 gave another consequence by saying that there is *"failure in not keeping pace with modern development due to lack of external courses and lack of staff"*. Interviewee E3 added: *"Because of the lack of appointments to some of the important directors' positions which leads to not taking enough vacations, there is a negative effect on the regulatory process"*. Interviewee E20 also added another consequence of the staff shortage by stating *"staff reducing causes a reduction in sections or department"*, which might lead to other regulatory problems. However, interviewees E3, E18, E19, and E20 assert a *"**lack of specialised staff**"* in different disciplines such as schematics, engineering, and diverse staff. Interviewee E18 agreed with the latter view by adding *"Lack of scientific qualifications for staff in the field of organisation"*.

4.4.1.8 Nepotism and Cronyism

Allocating responsibilities into an appropriate structure is a vital task in the organising process. In addition to bureaucracy and the delays with correspondence mentioned above, nepotism and cronyism are widely deemed as an issue in the administrative system of the Iraqi General Directorate of Civil Defence. Nepotism is the act of giving work or employment benefit to a family member and cronyism is the same action but for friends or colleagues. This can be seen by this response: *"The* ***effect of cronyism is seen in the application of orders and instructions in general, and in a lack of equality for all"*** (E11). Regarding the hierarchical distribution, interviewees E4, E6, E12, E20, and E22-24 touched on this point by saying there is: *"favouritism in the administrative distribution of hierarchical tasks"*, *"the* ***control of personal relationships, nepotism, political parties and blocs in giving managerial positions****"*, *"****putting the right man in the wrong place as a result of cronyism****"*. In addition to the **exploitation of these positions and their resources for personal purposes**, *"exploiting fire fighting vehicles for personal purposes"* (E20), for example, is a problem facing the organiser in the directorate.

Regarding the **control of political parties and blocs in giving managerial positions**, after 2003 a huge problem developed by officers becoming managers without having any compatibility, efficiency or ability for the job. Interviewee E4 pinpointed this problem by stating that there was a *"lack of compatibility, efficiency and the ability to accommodate the work by officers who joined the service after 2003 due to their not having previous experience and adequate knowledge. They were given important responsibilities as a result of their relationship with political parties in Iraq"*.

Although nepotism and the influence of political parties have a major role in giving managerial positions, **postgraduate studies for staff** are also affected by this problem (E12 and E13). Quoting interviewee E12: *"Staff members are only allowed to complete their postgraduate studies after obtaining approval that is affected by nepotism and political parties"*.

4.4.1.9 Staff Movement and Reduction of Sections

According to interviewees E4, E16-E18 and E25-28, the organising process has faced changes to its permanent staff which were not thought through, as in the words of the interviewees: *"Transfers between departments in the same organization and other organisations were not very well thought through"* and there were *"****unhelpful or thoughtless transfers of experts inside and outside the Directorate****"*. Interviewee E16 pointed that sometimes there is *"transfer or temporary transfer of some staff to other organisation"*. Based on interviewee E18's opinion,

this problem occurred because of *"ill-considered decisions, such as the random transfers, by people in higher positions"*. This point was also supported by interviewee E16, who stated the consequence of these random transfers by saying there were *"**thoughtless staff changes, which cause confusion**"*. Confusion is not the only consequence, but the staff changes also lead to *"**staff reducing and a reduction of sections**"* (E20) which have appeared in the organisational structure for the directorate.

This section described the nine weaknesses at the organising stage. A summary of organising weaknesses' sub-themes are illustrated in Figure 4.9. The following is a detailed argument of strengths during the organising stage.

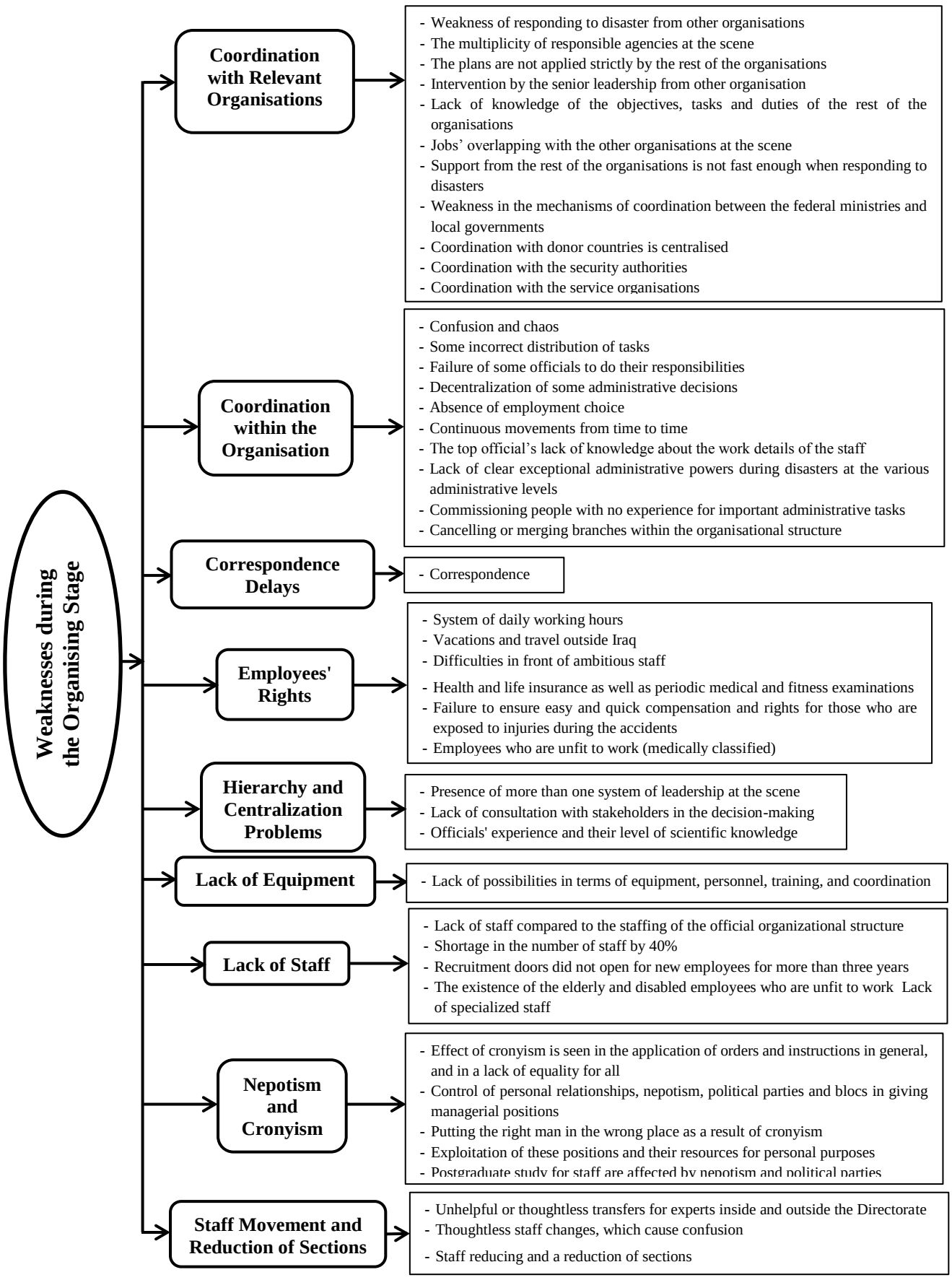


Figure 4.9 Weaknesses during the Organising Stage

4.4.2 Strengths during the Organising Stage

Although the organising process has a lot of weaknesses, it also has points of strength as illustrated in Figure 4.10. In the following two subsections the organising strengths will be argued briefly.

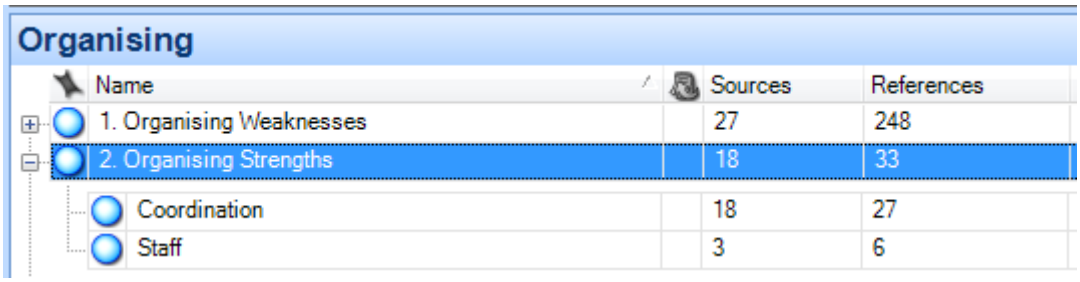


Figure 4.10 Nodes for Organising Strengths

4.4.2.1 Coordination

It is widely acknowledged that proper coordination might improve the responding process. In the Iraqi context, despite having various problems during this process, the experts describe the organisation process as a *"**quick response and good organisation**"* (E13). Similarly, interviewees E3 and E10 praise its *"**proper leadership**"* and *"good management"*. This is due to various reasons as mentioned in the interviewees E3, E11, E12, E15, and E20 responses: *"**follow-up for each joint work**"*, *"**working hard and desiring to develop**"*, *"the **adoption of scientific methods whilst conducting business** "*, using *"modern and efficient devices"*, *"**putting the right man in the right place**"*, and following *"**central decisions**"*.

Regarding the distribution of tasks and duties, interviewees E8, E11, E15, E19, and E20 have a good impression. This appeared through their responses as follows: *"The **duties and responsibilities are known by all staff members**"*, the employees *"try to be knowledgeable about the details of the work and determine the duties and tasks"*. This causes *"non-overlapping duties"* or *"**lack of overlapping in work between units, departments and branches within the directorate**"*. This non-overlapping in duties is also because of *"dividing the work between teams for sectors within the incident site"* and *"**working as a team**"*. Interviewee E19 described this process as a *"mini operations centre within the incident site"*. Moreover, interviewee E16 attributed the strength of the organising process to the *"**strong military hierarchy**"*. Meanwhile, interviewees E3, E4, E6, E14, and E22-E24 pointed out the **existence of the entire organisational structure approved by the Ministry of Interior** and the job

descriptions to ensure the implementation of duties. These had been mandated by the Directorate, which also updated the annual organisational structure.

In terms of **documentation**, interviewees E3 and E18 raised this point by saying there is *"continuously updated documentation (electronic and paper)"* and *"documentation exists for firefighting, rescue, and bomb disposal"*.

In addition, interviewee E7 stated that *"cooperation and coordination between the directorate and the rest of the organisation when responding to the incident seems to be good",* due to *"reducing the number of security checkpoints in Baghdad"*.

4.4.2.2 Staff

In addition to proper coordination, a knowledgeable staff in terms of experience and qualifications are deemed to be a cornerstone of any organising process (E4, E8, and E14). Interviewee E14 strongly believes that *"**most of the officers have Bachelor qualifications or above in the different disciplines of engineering, science, and administration**"* particularly *".....**efficient planning staff that have extensive practical experience**"*. Interviewees E4 and E8 confirm E14's point of view, stating that there is *"**accumulated experience for staff members and disaster responders**"* and that *"experienced, professional people get put into important positions"*.

The organising strengths are highlighted in this subsection. A summary for organising strengths' sub-themes is showed in Figure 4.11. What follows is an argument about weaknesses during the organising stage.

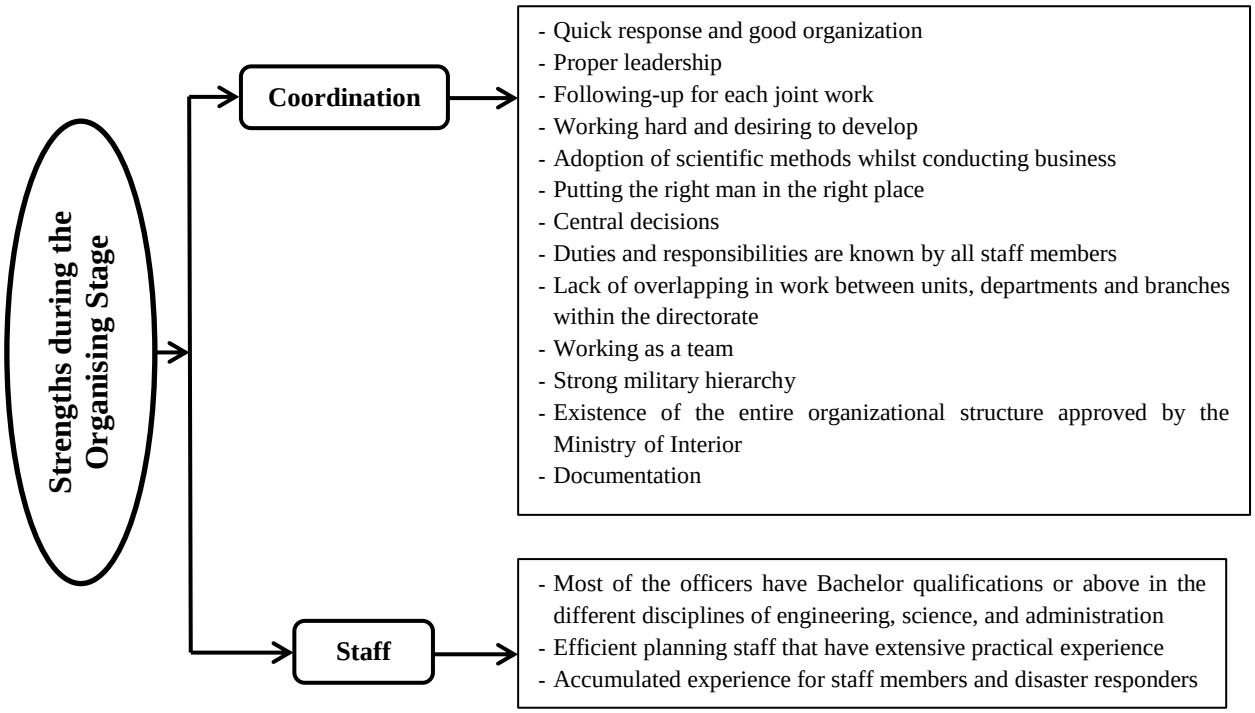


Figure 4.11 Strengths during the Organising Stage

4.4.3 Recommendations for the Organising Stage

After obtaining organising weaknesses and strengths, and in order to complete the evaluation for the current administrative system, the researcher asks the experts for any recommendations to improve the organising process in the future. These recommendations are illustrated in Figure 4.12 below and will be discussed in the next sections.

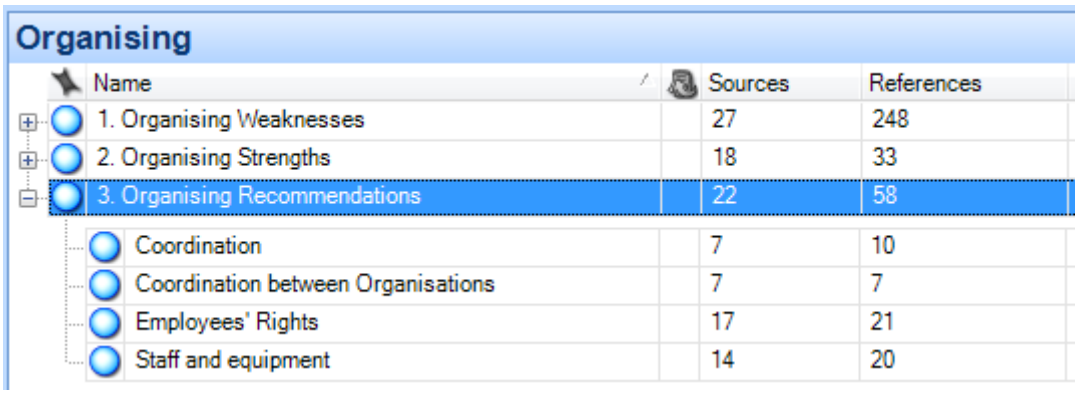


Figure 4.12 Nodes for Organising Recommendations

4.4.3.1 Coordination

In order to gain proper organisation, experts stressed the importance of **central leadership for all accidents**. Interviewees E10 and E11 mentioned this point in their responses: *"The importance of centralisation with flexibility in decision-making"* (E10), *"focusing on the central leadership for all accidents"* (E11). Further, interviewee E8 stressed, *"**Showing interest in the organisation by the key officials and decision-makers**"*. This might happen, from interviewee E4, E8, E14, and E19's perspectives, by *"**constantly updating the organisational structure**", "the **elimination of favouritism and bias**", "**transfer and application of experiences from more developed countries**", "the use of global systems (organisational structures)", "**attending external courses for an exchange of knowledge in the field of organising**"* and *"communicating with international bodies with experience in organising rescue operations"*. Further, interviewee E12 recommended *"**separating the General Directorate of Civil Defence from the Ministry of Interior**"*.

4.4.3.2 Coordination between Organisations

To guide any nation to respond to different hazards, scalable, flexible, and adaptable coordinating structures can be built to align key roles and responsibilities across the nation, linking all levels of government, nongovernmental organisations, and the private sector. To do so, interviewee E21 put emphases on *"**governance risk management to ensure the integration of all efforts** including government institutions, civil society organisations, the private sector, media, and public efforts"*. This governance might be obtained by *"developing a unified plan to respond to the disaster for the governorate, which includes the **participation of all organisations with all possibilities to determine responsibilities, duties, and the hierarchy**"* or by *"**identifying an effective operations centre**"* (E10). Interviewees E6, E20, E22, and E25 agree with this suggestion, stating the need for *"**effective interaction between the governmental organisations especially services**"*. Experts focused on a different specific organisation in addition to organisations that are relevant to the response process, as mentioned below: *"higher coordination with the relevant organisations at the incident"* (E19), *"effective coordination with water organisations about installing and maintaining a fire nozzles network"* (E12), *"imposing the security cordon properly"* (E20), and removing excesses on the national electricity grid system (E6, E22-E24). In addition, due to the utmost importance of organising response process, interviewee E21 highlights two other different points, which can be seen by these responses: *"**preparing disaster response and addressing systems with good resources, and readiness depends on the national and local capacities alike**", and "**adopting national***

multiple risks approach for disaster management and mobilizing of capacities at comprehensive government level without focusing on one executive organisation*"*.

4.4.3.3 Employees' Rights

Staff can be helped in balancing their responsibilities at work and at home by the way that they arrange their working hours. Interviewee E11 proposed the idea of *"**taking into account the psychological aspects for all employees**"*. Such aspects might be provided by *"**adopting global official working hours (1 day on- 2 days off) or (morning, evening, night)**"* in their work at civil defence centres instead of (12 hours on- 12 hours off). Interviewees E9 and E12 agreed with this suggestion.

Within the context of employees' rights, interviewee E3 sheds light on the staff's wishes in his recommendations, as in this quote: *"Account should be taken of **staff wishes to work within a certain department**"*. This recommendation was also supported by interviewee E11, who added two other important points, namely competence and experience. These suggestions can be seen clearly in the words of the interviewee: *"**adoption of competence, experience, and personal preference for the field of work**"*.

Regarding **staff rights to have their vacation outside Iraq, vacations to complement their studies, and health insurance**, interviewees E4, E17, and E25-E28 pointed out the aforementioned rights in the Iraqi Act for Civil Service No. 42 of 1960 and law of service and retirement of the Internal Security Forces No. 18 for the year 2011. Those interviewees recommended **activating certain paragraphs of these laws** within this context, as interviewee E17 quoted: *"Employees should get their full insurance rights by the Iraqi Act for Civil Service No. 42 of 1960, including the right to a vacation outside of the country, vacations to complement the study, and health insurance"*, *"activation of certain paragraphs of the law of service and retirement of the Internal Security Forces No. 18 for the year 2011, with respect to the staff members vacation enjoyment outside Iraq"*.

As far as the problem of employees who are unfit to work (medically classified) is concerned, interviewees E5, E6, E16, and E21-E24 made three suggestions: firstly, transferring them to the Social Welfare organisation. Secondly, transfer them to the morning shifts as administrators in civil defence centres. Thirdly, replace them by recruiting new employees with experience.

4.4.3.4 Staff and Equipment

According to interviewee E3, who has a lot of experience in planning, the key stakeholders should *"**provide the Directorate with modern staff, instruments and equipment**"*. Besides that, interviewee E3 asserted that *"**staff integration, particularly with specialists, is needed**"*. Similarly, interviewees E4, E8, E11, E17, and E25-E28 stressed increasing staff in the staffing, adoption of standard staff that are approved by the key stakeholders, recruit a sufficient number of staff with scientific competencies and qualifications as well as **commissioning people experienced in the implementation of organising tasks**.

Regarding equipment, interviewees E17, and E25-E28 proposed **providing staff members with modern individual protection equipment that keeps pace with modern world technology**. Further, interviewees E6 and E22-E24 suggested **developing telecommunications and informatics in the provinces**. Moreover, interviewee E16 recommended *"**distributing fire engines in some densely populated places**"*.

A set of various recommendations for the organising stage is shown in this section. Figure 4.13 gives the summary of recommendations for the organising stage sub-themes. The following section is a summary of the interview analysis.

4.4.4 Organising Stage Summary

To conclude, different strengths, weaknesses and recommendations have emerged from interview analysis. It can be seen that the strengths that are appeared in the organising stage are similar to its weaknesses. Following is the analysis of the interviews in the directing stage.

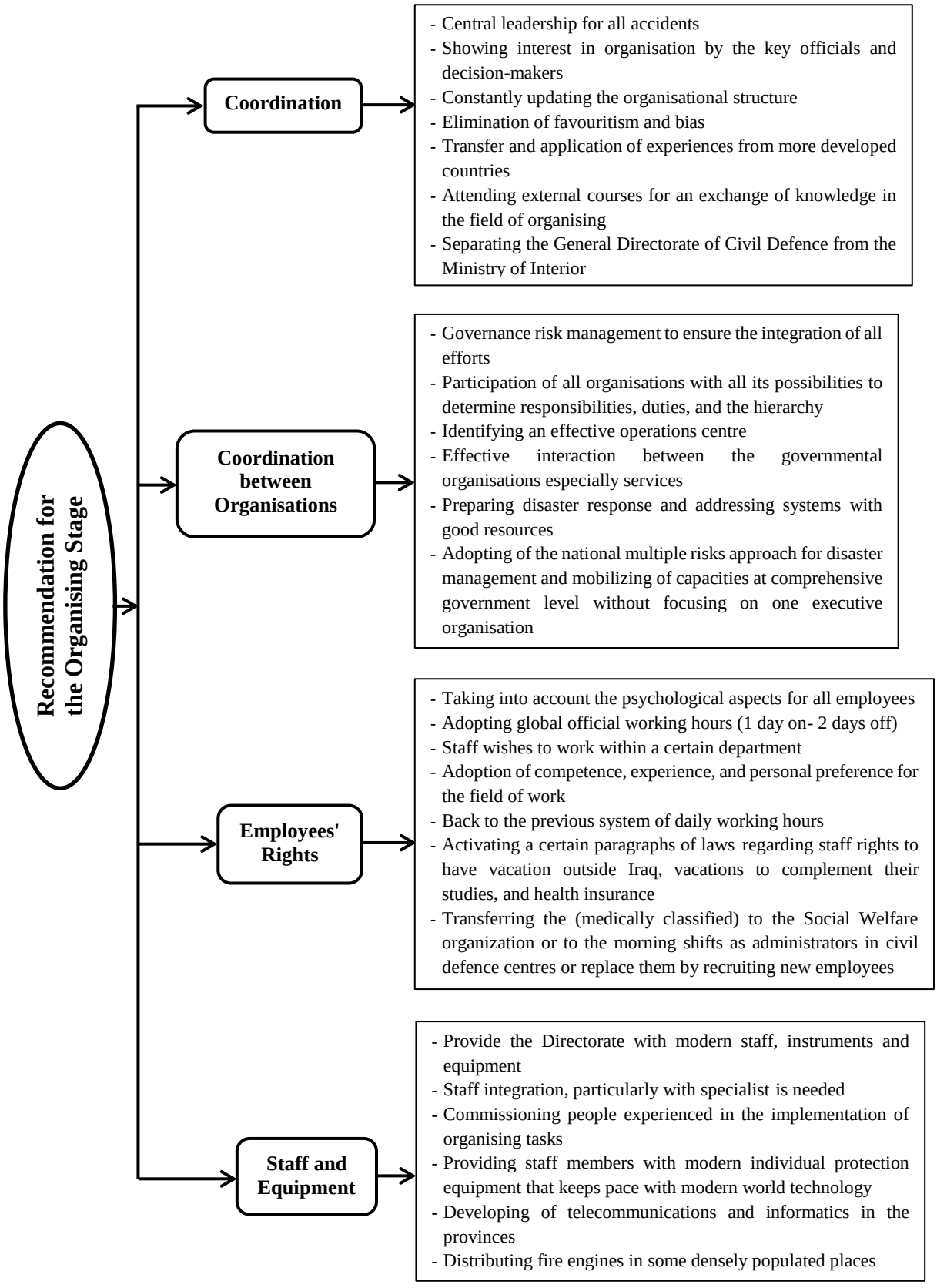


Figure 4.13 Recommendations for the Organising Stage

4.5 Interview Analysis – Directing Stage

The third stage of the disaster response management system is the directing stage. Different sub-themes have been identified from interviewees' responses.

4.5.1 Weaknesses during the Directing Stage

In order to complete the important elements in the evaluation of the current Disaster Response Administrative System, different points of weakness have emerged from interviewees' transcriptions. In the subsection that follows, directing weaknesses' sub-themes as presented in Figure 4.14 below will be discussed in the next subsections.

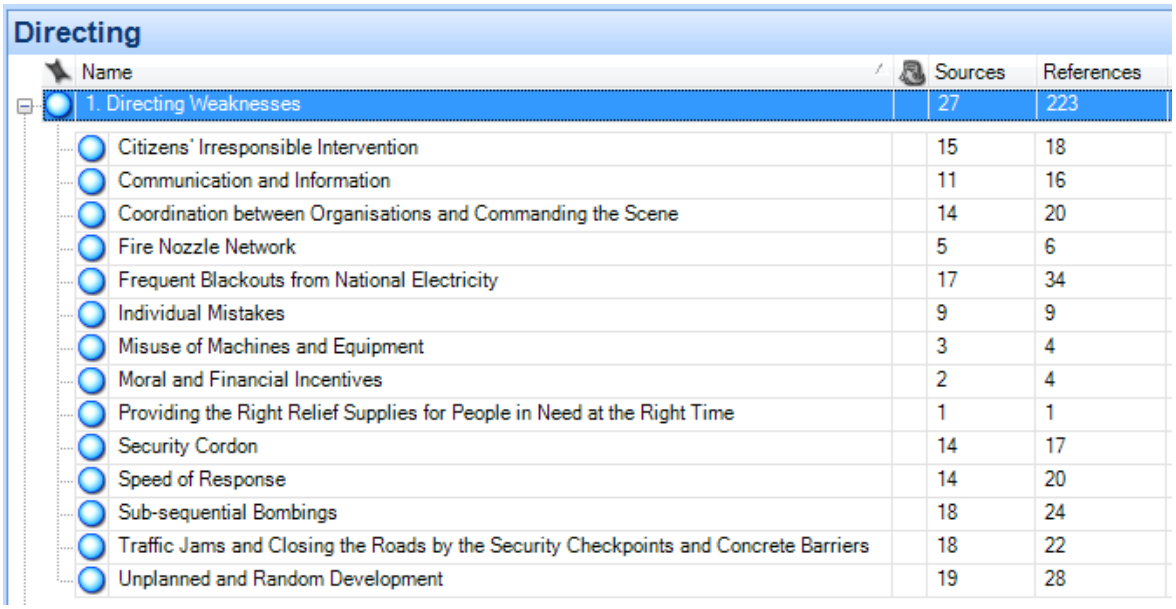


Figure 4.14 Nodes for Directing Weaknesses

4.5.1.1 Citizens' Irresponsible Intervention

It is part of the Iraqi culture to want to help in times of crisis. It is, therefore, common to have a lot of people coming to the scene after an incident has occurred to help victims, although this can be a hindrance to the official disaster responders. Interviewees E1, E2, E6, E8, E12, E13, and E22- E24 find this matter one of the most critical challenges during the directing stage. All of these interviewees mentioned ***public intervention*** *in matters outside the scope of their responsibility*. This theme also appeared in the planning challenges stage. Interviewee E11 criticises this behaviour because it is very *"difficult to contain the chaos during the incident because of the irresponsible intervention of citizens"*. Interviewees E3 and E4 gave the reason for this intervention as being due to the *"lack of society's awareness regarding non-intervention in the work of responders in the course of their duties"*, and *"lack of citizen awareness of the*

necessity of non-interference and the crowd near the scene". Moreover, due to the poor security situation in Iraq, this intervention might be exploited by suicide bombers, which potentially increases the number of losses for such an incident. This point was confirmed by interviewee E20, stating that the *"ignorance by citizens to the seriousness of the proximity to the scene and exploiting this by suicide bombers"* causes these additional problems. Interviewee E20 also stressed the lack of citizen knowledge regarding the explosive materials as follows: *"the lack of knowledge and familiarity with the dangerous and explosive materials by people is evident"*. In addition, Interviewees E10 and E15 pointed out that "**citizens gathering around the scene**" might hinder the responders in their work. Interviewee E13 attributed this gathering to the *"lack of society awareness in general, such as the crowd at the location of the accident"*.

4.5.1.2 Communication and Information

Effective directing of resources, when responding to terrorist incidents, requires assessing information prior to, during, and after such events. According to interviewees E14, E17, E25-28, there is a *"**lack of intelligence information** to figure out who and when and where gets the terrorist incident"*. The interviewees gave different reasons for this lack of knowledge, for example, *"Delay in reporting"* (E16), *"the poor quality of the mobile network while reporting"* (E8), *"False calling"* (E12), *"lack of security camera systems"* (E18).

Regarding the communication, there are different areas of difficulties in the communication when responding to disasters, such as *"**weakness of telecommunications networks** during disasters, there are often no alternatives"* (E21), *"**outdated communications devices** and there is no regular maintenance for them"* (E17, E25- E28).

4.5.1.3 Coordination between Organisations and Commanding the Scene

There is no doubt that a lot of difficulties appear in achieving overall co-ordination in any community disaster. One of these difficulties is the *"coordination with the rest of the government organisations"* (E10). It is widely believed that local organisations have an important role in responding to disaster through saving lives and supporting evacuees' right after a disaster. But at the same time, if this rule is not applied correctly, this might lead to serious consequences, especially in extreme events. Interviewee E4 agreed with this view and went on to assert that there is a *"**lack of cooperation from the rest of the organisation according to the plan**"*. Interviewees E14 and E16 support this point and believe that there is *"**too much variation in performance during the implementation of the response plan by other organisations**"* and *"**some organisations intervene without knowing what they are doing**"*

which worsens the situation. Interviewees E11 and E21 also mentioned this point in their responses, stating: *"failure in the implementation of plans from other organisations"*, *"the plans are not applied strictly by the rest of the organisations"*.

Interviewees E2 and E19 raise an important point regarding the *"**weakness of responding to disaster from other organisations,** such as services and security organisations"*. Such weaknesses might cause delays while responding to disasters. This point was confirmed by interviewee E8, stating that *"the civil defence teams are not allowed to enter some sensitive areas in the country until after obtaining security permissions, leading to delays in response"*. This point was also supported by interviewee E19, who sees this from the operative point of view, *"**late arrival of the supporting rescue machines of relevant departments**"* might cause a delay in responding to the disaster.

In terms of commanding the scene, interviewees E11, E13 and E21 pinpointed this point as one of the most important challenges during the directing process as follows: *"presence of too many leaders at the scene causing failure to obtain satisfactory results"*, *"**multiple sources of decision making at the scene**"* which might increase the chaos at the scene. Interviewee E16 touched on this point by stating different views such as: *"there is a **difficulty in commanding the scene due to the intervention from responsible persons or non-experienced higher ranks from other organisations**. This led to **limit the authority of command at the scene**"*. Consequently, this might have a negative effect on directing the process during the response to disasters. Further, interviewee E19 puts emphasis on the *"**failure to secure the site before the intervention of civil defence teams**"* which killed a lot of disaster responders. Whilst interviewees E6, E19, E22-E24 add other points of weakness related to the *"**delay in reaching the scene because of the security roadblocks**"* and *"**weakness in the water pressure in the fire nozzles**"*.

4.5.1.4 Fire nozzle network

The most important tool for any firefighter or responder is the fire nozzle; it tends to be used as a primary weapon for the responders. In Iraq, there *is a "**lack of adequate fire nozzles**"* (E18). Interviewee E19 stressed the *"absence of fire nozzles, especially in commercial areas"*. Interviewee E9 confirmed this point stating: *"there is an inadequate number of fire nozzles, despite setting up new networks, but sometimes these do not work properly"*. Interviewee E10 gave a reason for this defect, stating that there is a "**failure in the installation of new fire nozzles**" causing these to malfunction. Interviewee E4 added, *"too few fire nozzles and these*

being buried or having weak water pressure causes more problems". Interviewee E19 attributed this shortage and malfunction to the *"**lack of regular maintenance of the old fire nozzle network**"*.

4.5.1.5 Frequent Blackouts from National Electricity

Iraq has suffered from programmed cutting off of National Electricity since the First Gulf War in 1991, due to the significant damage in many power stations and transmission lines. Electricity is frequently cut off in any 24 hour period, and this results in illegal wiring by households, who wire up a connection to the national grid, because they need power throughout the day and night. This illegal wiring is often poorly constructed and consequently dangerous since the wires often hang down to head height. When responders are driving tall vehicles to the scene of a disaster, they are often forced to drive through these live wires, making themselves subject to an electric shock, and sometimes vehicles can get stuck in the wires. Interviewee E17, E25-E28 stressed this important point as it generates a lot of challenges for the responders, for example, *"having illegal wires connecting to the **national electricity grid system** as a result of frequent power shortages"* can lead to more losses amongst responders' teams (E4, E6, E11, E18, and E22- E24). This point was also supported by interviewee E7 who saw this from the operative point of view: *"**frequent use of generators** due to a lack of supply of national power"*. Interviewees E4, E6, E7, E10, E11, E22- E24, agreed with E7's view, stating that *"**random wiring, especially for Simi-Generic Generators** that prevent the arrival of civil defence teams to the scene"* cause many problems. Similarly, interviewees E12, E13, E17, E20, E25-E28 assert the same point, adding *"random wiring for Simi-Generic Generators and consequent excess on the national electricity grid"* will cause delays in responding to disasters. Furthermore, interviewee E10 raises a slightly different challenge, although linked to electricity supply, by stating that there is a *"weakness in the **electrical network maintenance**"*. This weakness can have a significant impact on responders' lives since the very poor levels of safety can be fatal. Furthermore, by using low-quality electrical materials, such as illegal wires, this might also increase deaths of responders, as well as the general public. Interviewees E6, E22-E24 also mentioned the *"**absence of quality control** on imported materials, particularly electric"* can have a huge impact on safety.

4.5.1.6 Individual Mistakes

Undoubtedly, mistakes happen when responding to extreme events. To avoid duplication of mistakes, lessons should be learned from experts' experience, especially when the price of error could be human lives. According to interviewee E1, *"individual mistakes"* might happen while

responding to a disaster. Interviewee E12 gave a reason for these mistakes as being that *"**tasks overlapped**"*, while interviewee E11 gave another reason, the *"**misplaced judgement in rushing to the scene or task without a thought about the potential consequences**"*. Interviewees E4 and E14 highlight an important point about *"**failing to secure the site before the intervention of civil defence teams**"*. Such failure might cause many responders' and peoples' lives. Mistakes in responding to a disaster are attributed by interviewees E2 and E3 as being an *"**over-reliance on others to do the work**"* and *"full compliance with laws and regulations (**there is not enough flexibility**)"*. Based on interviewee E8's responses, there is a *"**failure to maintain the public and private property in some cases**"* which might increase the physical damage to such property. However, interviewee E16 pointed to the problem of *"**false reporting or fictitious accidents**"*, which are made by irresponsible people. Consequently, such false reporting can lead to disaster responders' resources being wasted.

4.5.1.7 Misuse of Machines and Equipment

It is widely acknowledged that the capability of disaster responders' mobility could be enhanced by using more sophisticated and reliable machines and equipment. Through interviewees' responses, a number of weaknesses identified related to *"misuse of machines and equipment"* (E9). Interviewee E12 touched on this problem as follows: *"**equipment is not updated**"* and *"**machinery maintenance is limited to remedial maintenance only**"*. Interviewee E8 explains this point of weakness more by stating: *"**There is a lack of care for firefighters' equipment at the scene, causing rapid deterioration of this equipment**"*.

4.5.1.8 Moral and Financial Incentives

It is generally accepted that responding to extreme events such as terrorism requires good morale in the disaster responders' team. To maintain this morale, two types of incentives are given to staff that have done special or unusual work while responding to disasters. Points of weakness have been revealed from experts' responses related to the application of this point. According to interviewees E4 and E14, *"**the authority of giving financial incentives is exclusively limited to the director of the General Director of Civil Defence in Baghdad**"*. This means the directors of all the Civil Defence branches in all Iraqi cities cannot give any financial incentives to their employees. Moreover, **despite having morale incentives from heads of departments or general managers, there is no financial benefit.** Unlike the morale incentives are given by the Prime Minister and the minister which might lead to a 6 month or one-year promotion (with consequential financial reward).

4.5.1.9 Providing the Right Relief Supplies for People in Need at the Right Time

One of the main problems in public management is the effective logistical supply when responding to extreme events on a large scale. Interviewee E3 stressed this problem, stating that there is an *"**exaggeration of logistical supply**"* in some cases, meaning that in reality, the situation is often more difficult than reported.

4.5.1.10 Security Cordons

Scene security is important for all agencies involved in the response. Unauthorised access to the scene of an emergency might jeopardise rescue activities or any investigations. To facilitate the operations of the disaster response services and other agencies and to prevent unauthorised interference with evidence or property, security cordons are established around the scene. According to interviewees E2, E4, E9, E13, E19, E21, there is often a *"**failure to impose a proper security cordon**"*. As a consequence, it is *"difficult to contain the chaos during the incident because of the irresponsible intervention of citizens"* (E6, E11, E22-24). Similarly, interviewees E16 and E19 stated that there are *"**incorrect procedures in imposing security cordons**"* and it might *"be dependent on mood"* (E3). Interviewee E3 also raised a different challenge, regarding control access, by stating, *"**the permission to go through the security cordon is subject in some cases to the mood of the enforcer**"*. Interviewee E8 touched on this point by stating: *"there is often some ignorance in setting up of the security cordon by the authorities, who are responsible for it, leading to confusion and delay in responding, as well as having a negative influence on criminal evidence"*. Based on interviewee E11's opinion, this problem sometimes occurs because of a possible *"**lack of seriousness in the local police for the citizens' exclusion risk sites** and emptying the area of people so that civil defencemen can work properly without people intruding"*.

4.5.1.11 Speed of Response

It is widely acknowledged that speed of response is essential for effective disaster response because more lives can be saved. However, sometimes delays occur and this can have a detrimental effect on the rescue effort. Some of the interviewees suggested reasons for the responders' delay; interviewee E4 attributed it to *"the **multiplicity of responsible agencies** at the scene, especially from other organisations"*. This point was also supported by interviewee E11 who saw this from the operative point of view: *"**varying periods of time can pass in response to a disaster for the other stakeholder**s who are related to the response process"*. In a similar way, interviewee E19 criticises the *"slow response from the rest of the relevant*

organisations". Interviewee E8 brought up an important challenge for the directing process regarding **obtaining security permissions when entering some sensitive areas**.

Due to the shortage of heavy rescue equipment, as shown in section 4.3.1.4 and section 4.4.1.6, interviewees E6, E19, and E22-24 shed light on an important point regarding this aspect, *"the support from the other organisations is not fast enough in responding to a disaster, particularly when requesting heavy rescue equipment"*. Moreover, interviewees E7 and E16 attributed the delay in response to the lack of public awareness with respect to giving priority to emergency vehicles such as fire engines attending the scene. Interviewee E12 agreed with the aforementioned view and added another reason as follows*: "**the tribal mindset** of people has a negative impact on the response to the disaster"*. This refers to the difficulty in responding to, for example, a female victim, from a male responder. In addition to that, a different reason and point of view emerged from the interview transcriptions: *"legal proceedings in the case of exposure to traffic accidents"* (E7), *"**false calling**"* (E12*),"**delay in reporting**"* (E16), *"**multitude of decision sources**"* (E13), *"exploiting firefighter vehicles for personal purposes"* (E20), and *"**lack of financial allocation** for the Directorate (which led to the failure to implement some of the tasks included in the plan).* All of these points had a negative effect on the speed of completion of duties, according to E3, together with a *"**lack of understanding of the guidance or orders** given due to a lack of education and limited mental capacity".* There was also reference to the problem of maintenance from E3, saying *"**defective equipment and devices were not regularly and properly maintained**"*.

4.5.1.12 Sub-sequential Bombings

Due to the poor security situation in Iraq, sub-sequential bombings occur frequently. This problem is considered the main challenge facing the responders in the directing stage. According to interviewees E7 and E12, there is a *"**fear of double bombings**"*. The terrorists use women, addicted teenagers, the elderly and disabled, especially people with mental illness, as well as animals and dead bodies to carry bombs (E6, E21- E24). So the responders cannot predict when and where the bombing will happen. Interviewees E15 and E21 touched on this point by stating: *"**there is a lack of knowledge about the people who carry out explosions and the time and place of the explosion**"*. Interviewees gave reasons for this problem as being due to subsequent or sequential bombings as a result of the absence of security and awareness of the security men (E6, E11, E22- E24), in addition the lack of effective checking devices (E4, E14, E17, E25-28), *"the lack of modern and effective devices to detect explosives"* (E16), and

the *"ignorance of citizens to the seriousness of being close to the scene since this could be exploited by suicide bombers"* (E20).

4.5.1.13 Traffic Jams and Closing the Roads by the Security Checkpoints and Concrete Barriers

There is constant traffic congestion at security checkpoints throughout the country, and especially in Baghdad. This is a particular problem for responders trying to get to the disaster scene since the traffic congestion can cause delay. Interviewees E6, E10, E12, and E22-E24 had the same opinion about the **traffic jams** as being a major challenge facing responders in the directing stage. Interviewees E3, E8 and E12 agreed with this point and saw another challenge regarding s**ecurity checkpoints**, saying that congestion at security checkpoints causes delay in the arrival of civil defence teams, while interviewee E11 points out that there is a *"traffic difficulty in passing through some unpaved roads in many neighbourhoods and residential areas"* and the "*chaotic nature of road works without proper notification or signage, as well as the lack of safety and security standards, since there exists no clear timetable of works to be completed".*

However, interviewees E2, E7, E16, E17, and E25-E28 brought up a new challenge for the directing process regarding **security concrete barriers**, saying that there was a multitude of concrete barriers and closed roads because of the security reasons.

In terms of **closing the roads because of the security situation**, interviewees E2, E11 and E19 mention that there are sudden road closures as a result of a lack of coordination with the security authorities who have decision-making powers. This problem happens because of the security situation which impedes access to the scene.

4.5.1.14 Unplanned Random Development

Due to the 2003 invasion of Iraq, and the subsequent Iraq War, the majority of Iraqi cities have often faced severe infrastructural damage. After 2003, due to the security breach and a lack of strong leadership in the government, all of this had a significant impact on the adequacy of rules and regulations that do not meet societal needs, which is why most people are not committing to the current regulations. Subsequently, this random situation appears.

In terms of **poor urban planning**, according to E10, E13, E17, E20, and E25-E28, Iraqi cities suffer from poor urban planning such as random housing, factories and shops especially in shopping centres which make the response process very difficult and time-consuming.

Regarding the **lack of regular route networks in some areas**, one of the interviewees, E11, captured this problem as follows: *"the existence of random residential complexes that do not have regular route networks is an issue"*. Interviewee E3 and E20 grumbled about the **narrow streets** as mentioned in their transcriptions: *"defect in urban planning, especially regarding the narrow streets"* and there is an *"**imbalance in the width of streets and alleys**"*. However, interviewees E6, E11, E18, E20, and E22-E24 attribute the problem of narrow streets not only to poor urban planning, but to abuses taking place on the main roads and markets, such as vendors using the **road's forbidden hard shoulder to sell goods**, *"random exploitation of the road's forbidden hard shoulder"*, *"exploiting the road's forbidden hard shoulder by vendors"*. Such problems hinder the mobility of the response teams' vehicles due to the huge size of the vehicles. However, interviewee E11 raises a different challenge: *"**there is an absence of municipal roles in the adjustment of roads periodically**"* which causes a delay in reaching the scene. Interviewees E4, E7, E12, E18 on the other hand, provided a different reason for delays: *"the **absence of a building coding system** which has negative effects on the response time"*.

With regard to **random storage of goods**, interviewees E7, E13 and E20 criticise this point. Interviewee E7 briefly explained that "random storage of goods in the commercial market areas can cause fast spreading fires" which make the response process very difficult. Interviewee E20 gave an important reason for this: "*there is a failure to follow the conditions of safety and security in storage".*

To sum up, the previous subsections have presented directing weaknesses that the disaster responders face during the directing process. Figure 4.15 clearly illustrates the sub-themes of directing weaknesses. In the section that follows, directing strengths sub-themes will be discussed.

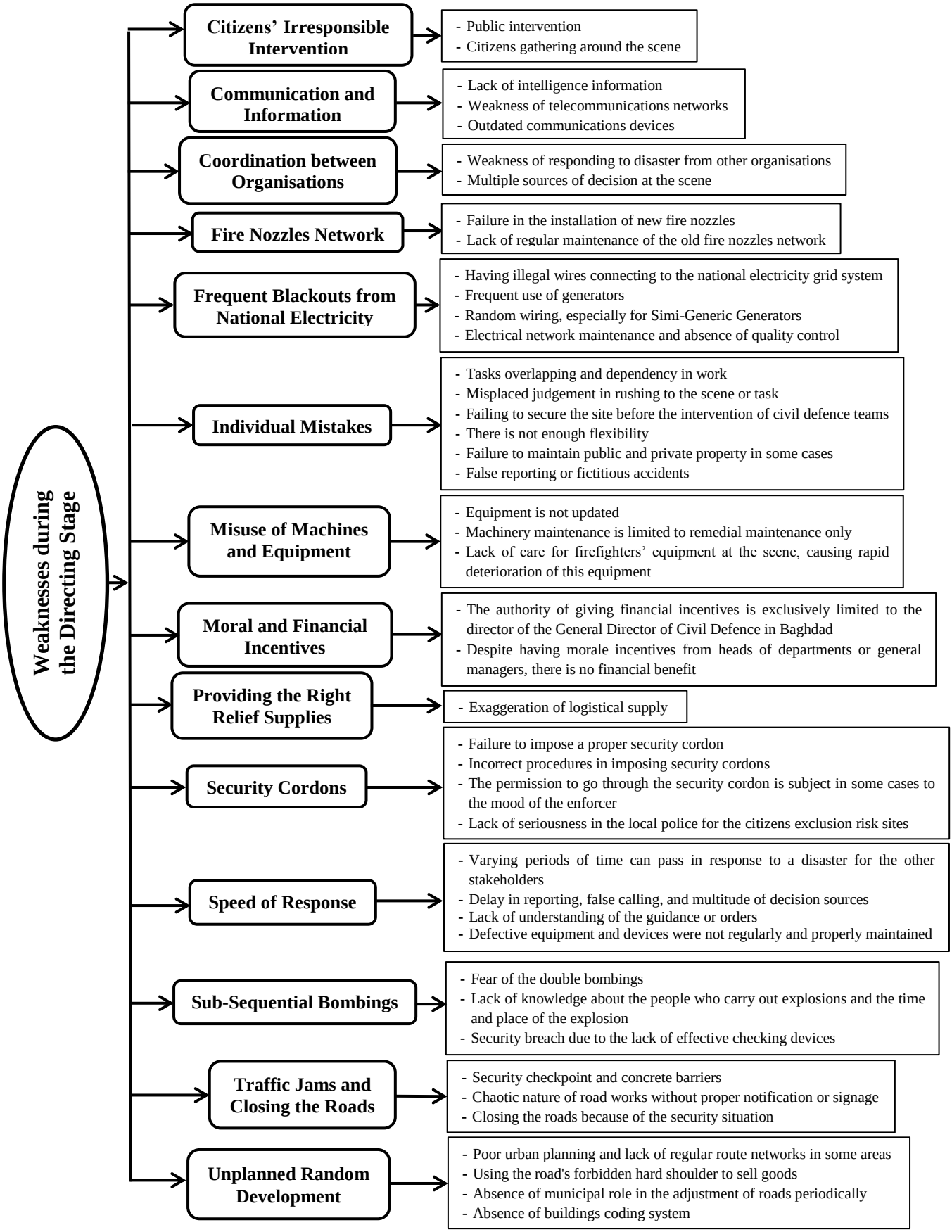


Figure 4.15 Weaknesses during the Directing Stage

4.5.2 Strengths during the Directing Stage

A lot of weaknesses were revealed from interviewees' responses in the previous section, despite that, there were more points of strength. These points are demonstrated in Figure 4.16 below and will be discussed in the next sections.

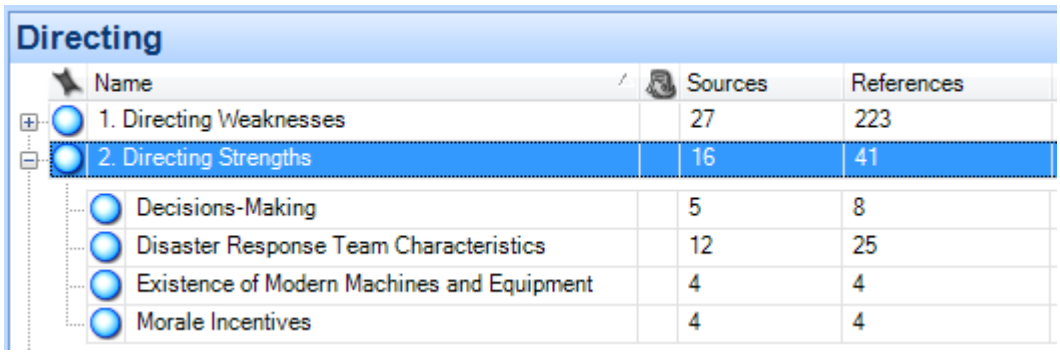


Figure 4.16 Nodes for Directing Strengths

4.5.2.1 Decisions-Making

It is widely known that the critical component of any disaster response is decisions- making. Therefore, the success of that response is dependent upon effective decisions being made in a timely manner. Interviewee E1 praised the *"**existence of specific contexts to respond to the disaster**"* and *"**proper appreciation of the position**"* due to their active role in decisions-making. Interviewee E3 mentioned that *"the ability to make decisions"* is one of the advantages of directing process, particularly the *"**centralization in decision-making**"* (E8). Moreover, interviewee E3 attributed the strength of the directing process to the *"**ability to evolve**"* and *"the **ability to urge the staff and to convince them**"*. Interviewee E15 supported this point and believes that *"control of the scene"* one of the most important strengths during the directing process.

4.5.2.2 Disaster Response Team Characteristics

Responses to terrorism activities in a disaster situation are typically complex problems with dire consequences that must be solved in a very short amount of time to limit damage to people, property and environment. Interviewees E1 and E4 stated that disaster response teams must be precise, have experience, react quickly and react with courage. Similarly, interviewee E11 supports this point in saying that responders: *"must **not hesitate and have courage in facing all types of accidents**"*.

Regarding the **existence of experienced and efficient officers and ranks**, interviewees E14 and E16 mentioned this advantage in their responses. Interviewees E4 and E19 gave the reason for that efficiency as being due to *"**accumulated experience** for the responders"*, while interviewee E16 attributes this to *"**a strong military hierarchy**"* and *"**speed of response**"*. Interviewees E10, E12, E13, E15, E19, and E20 supported the latter point. Interviewee E13 added that, with these experienced and efficient responders, there is a *"quick response and good organisation"*. On this point interviewee E15 asserts: "speed in transferring the injured, evacuating the victims and moving the deceased".

In terms of **preparedness for the disaster**, interviewees E4, E10 and E14 mentioned that responders are on standby 24/7. Based on interviewee E20's opinion, this positive point appears because of the *"**proactive detection of a second or subsequent incident prevents further casualties**"*. Whilst interviewee E10 attributes this point to *"…… proper implementation of the plans"* which leads to *"good implementation and thus good results"*.

Regarding **morale** during responding to a disaster, interviewee E11 argued that *"**morale is always boosted during work**"* and the disaster response team are *"**insisting on the completion of work in the shortest time and as efficiently as possible**"*. This point was also supported by interviewee E3 who saw this from the operative point of view: *"**the serious taken with regard to work**"*. Interviewee E4 adds another point related to *"**altruism**"* as one of the major Iraqi society aspects especially when a large-scale disaster happens.

Interviewee E14 on the other hand, highlights as a strength that *"there is an **initial response centre that notifies all the relevant organisations as soon as possible**"*. Interviewee E11 also touched on this point in saying *"the **response from many of the government organisations when asked for support is usually good, if sometimes delayed**"*. The importance of this support during disaster response activity is of the utmost.

4.5.2.3 Existence of Modern Machines and Equipment

Existence and preparation of equipment that used for high-level disasters response and assist in their activities appeared to be the crucial factor for effective disaster response. Interviewee E14 puts emphases on *"the existence of modern machines and equipment"*. Interviewees E12 and E19 on the other hand, highlight as a strength that **speed or effectiveness of communications, especially light rescue mechanics**.

Regarding the fire nozzles network, according to interviewee E13, *"the* ***existence of operational fire nozzles network*** *which subjects to weekly tests and there is coordination with the water organisation regarding the installation, maintenance, and repairing fire nozzles network"* are considered as one of the strengths in the directing process.

4.5.2.4 Morale Incentives

There is no doubt that morale incentives or morale boosts, in the form of financial incentives or acknowledgement letters, have a significant impact on individuals' behaviour particularly in large extreme events. Interviewee E2 acknowledged *"****obtaining morale incentives when responding correctly and quickly to the disaster****, especially in major accidents helps"*. Interviewees E4, E5 and E18 agree with this point and added: *"****when getting the morale incentives from the minister or the prime minister, six months or a year will be added for the years of service of staff members****"*. These types of incentives might encourage the disaster response team to respond more effectively and quickly.

The four themes of strength for the directing process have been discussed in this section. Various sub-themes have appeared from this discussion as illustrated in Figure 4.17. In the next section, a set of recommendations will be discussed in detail.

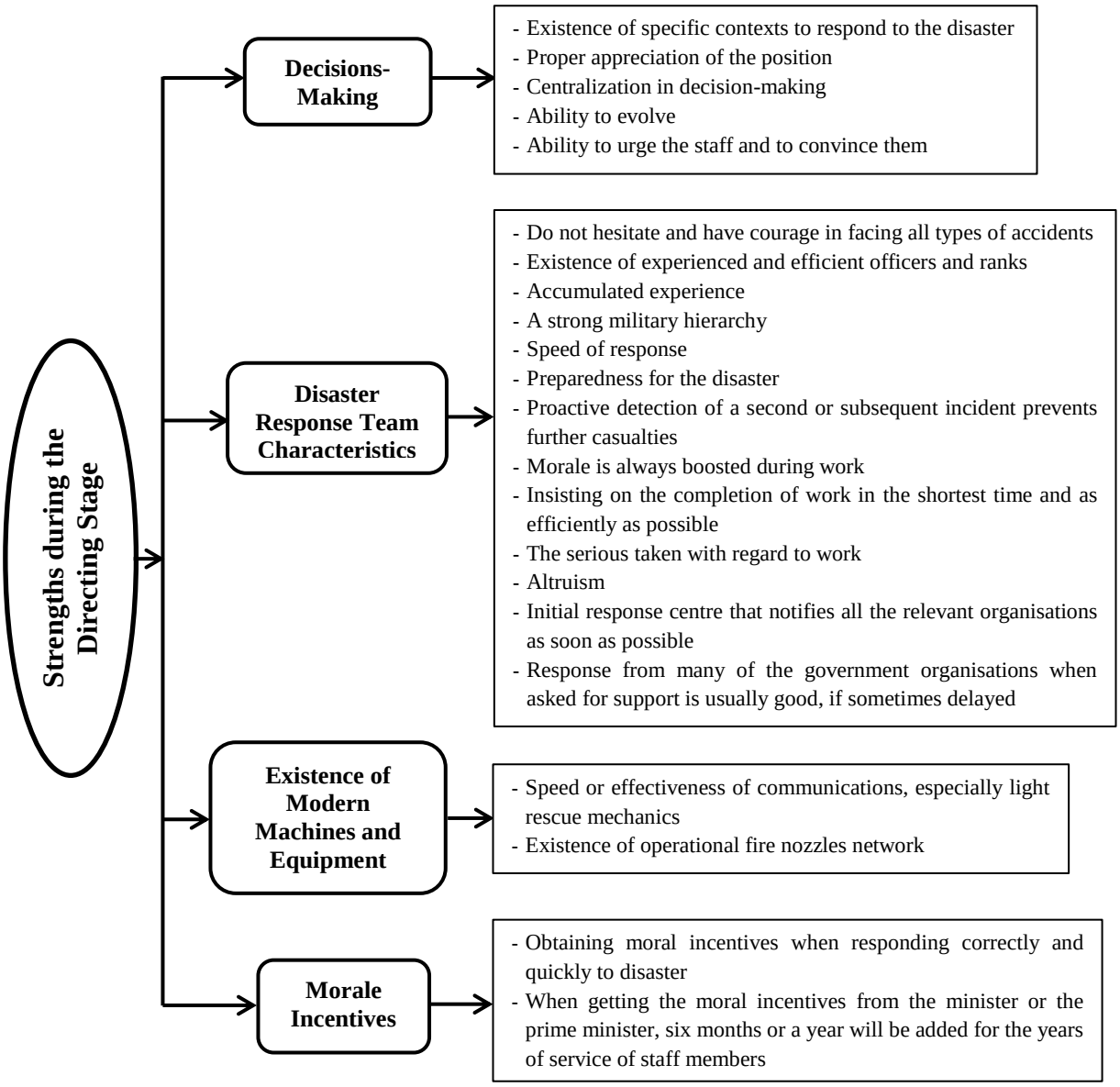


Figure 4.17 Strengths during the Directing Stage

4.5.3 Recommendations for the Directing stage

To conduct a good evaluation for the current administrative system, and after determining the points of weakness and strength for the directing stage, a set of recommendations emerged from the responses of the interviewees. In Figure 4.18 below, different sub-themes have been highlighted from these recommendations.

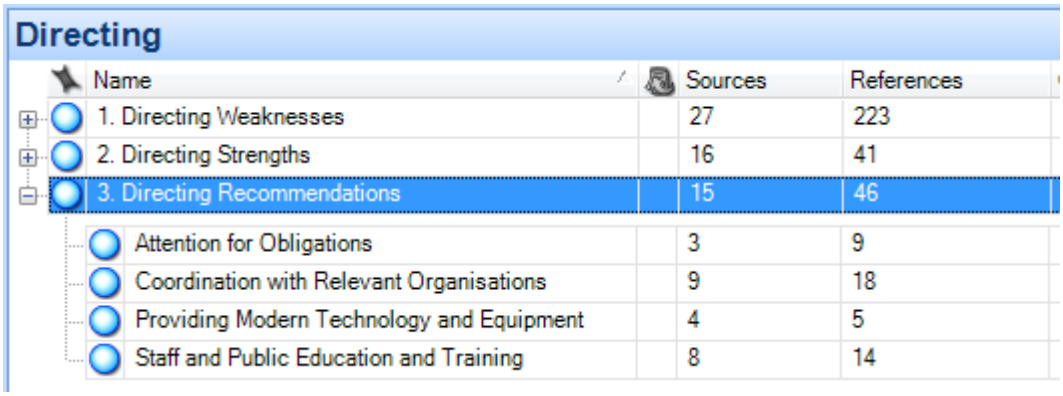


Figure 4.18 Nodes for Directing Recommendations

4.5.3.1 Attention for Obligations

In order to reduce human vulnerability, attention should be given to disaster response rules and principles. Such principles were emerged to address various aspects regarding disaster response. Interviewee E3 highlighted **the importance of obligations** and following the correct contexts and systems at work. Interviewee E11 agree with this view and asserts on the *"**adoption of the orders and instructions contained within the operations leadership curricula of the fire, rescue, and safety**"*. Moreover, interviewee E1 put emphasis on *"**assessing the situation accurately**"* and *"**estimating the resources accurately**"*. Interviewee E3 supports the latter suggestion and added the disaster responders should *"**rationalise the consumption of resources**"* as much as they could. Interviewee E3 also asserts the point of *"**daily inspection of the work requirements**"* and *"**giving attention to personal equipment when wearing them and sustain them on a regular basis**"*. Interviewee E11 highlighted another suggestion, stating that every disaster responders should *"**focus on the central leadership of all accidents**"*. Because such centralisation might enhance the directing process. Consequently, the chaos at the scene might decrease significantly.

4.5.3.2 Coordination with Relevant Organisations

It is widely acknowledged that effective coordination is an essential ingredient for disaster response management. For this purpose, interviewees E10 and E19 recommended: *"**increasing coordination between organisations while responding to emergency situation**"*. Such coordination might needs *"**increase the mobilisation speed of the various relevant agencies in various organisations by updating and test of inter-institutional response**"* (E4). This mobilisation speed, from interviewee E19 point of view, requires continuing *"**conducting joint exercises with the relevant organisations**"*. Interviewees E3 on the other hand stated the need for *"**opening up to the countries or supporting organisations, which are related to respond to the disaster**"*. Interviewee E6, E22-E24 put emphasis on the necessity of *"**installing fires nozzles network in public and private places, markets, and shops**"* and *"*.....***maintaining it regularly**"* as well as *"**removing stalls from the road's forbidden hard shoulder that hinders the civil defence teams work**"*. However, interviewee E8 proposed the idea of **providing the buildings with the coding system** because of its impact in reducing disaster response time.

4.5.3.3 Providing Modern Technology and Equipment

Once the major event occurs, the response is often quickly and need modern technology and equipment. Therefore, interviewees E3 and E14 proposed the idea of *"**providing the directorate with modern equipment and devices which keep pace with modern era**"*. Interviewees E15 and E16 highlighted another suggestion, stating that they would like to see the *"**install of effective modern Security Cameras System everywhere**"*. However, interviewee E16 proposed the idea of *"**using GPS system**"* while responding to the disaster.

4.5.3.4 Staff and Public Education and Training

It has been reported that to meet the increasing demand caused by hazard impacts on larger populations, response alone is not sufficient. By sharing knowledge between communities and individuals, hazards and risks might be identified quickly and fast action will be taken to build safety and resilience, and reducing future hazard impacts. Interviewees E4, E8, E10, E16, and E19 agree with this view, stating **the necessity of educating the public**. Interviewees E8, E10 and E19 also emphasise on the dangers of approaching the scene and citizens should not crowd around the scene. Interviewees E4 highlighted the importance of *"……. **conducting public educational activities**"* to achieve good public awareness. Interviewees E4 and E8, on the other hand, proposed another idea; *"**engaging the civil defence material with the curriculum of education and higher educational ministry** to increase public awareness"*.

Interviewees E3, E8, E14, and E19 went on to add a suggestion related to staff educating. Moreover, interviewee E3 put emphasis on *"**the importance of educating the staff about periodic maintenance of the machines and equipment**"*. Interviewee E8, on the other hand, stated the need for *"**increasing awareness about the importance of the security cordon from the concerned authorities**"*. However, interviewee E3 *"**emphasis on fitness and continuous exercise**"* and proposed the idea of *"**self-development for each member of staff**"* as well as *"**continuing training and development. Do not stop at a certain point**"*. Interviewee E14 agrees with this suggestion, adding that *"**increasing training and doing drills, rehearsals and practices, especially on modern instruments and equipment**"* might decrease the margin of error in responding to the disaster. Moreover, to enhance the directing response process between different organisations, *"**joint exercises with the relevant organisations should be conducted**"* (E19).

From the arguments in this section, various suggestions have arisen to enhance the directing process. Figure 4.19 below presented a summary of the directing recommendations' sub-themes. In the section that follows, a discussion of the controlling stage is provided.

4.5.4 Directing Stage Summary

To sum up, various strengths, weaknesses and recommendations have been highlighted in this stage. Some of the strengths are also the weaknesses, and vice versa. The following sections will analyse interview responses for controlling stage.

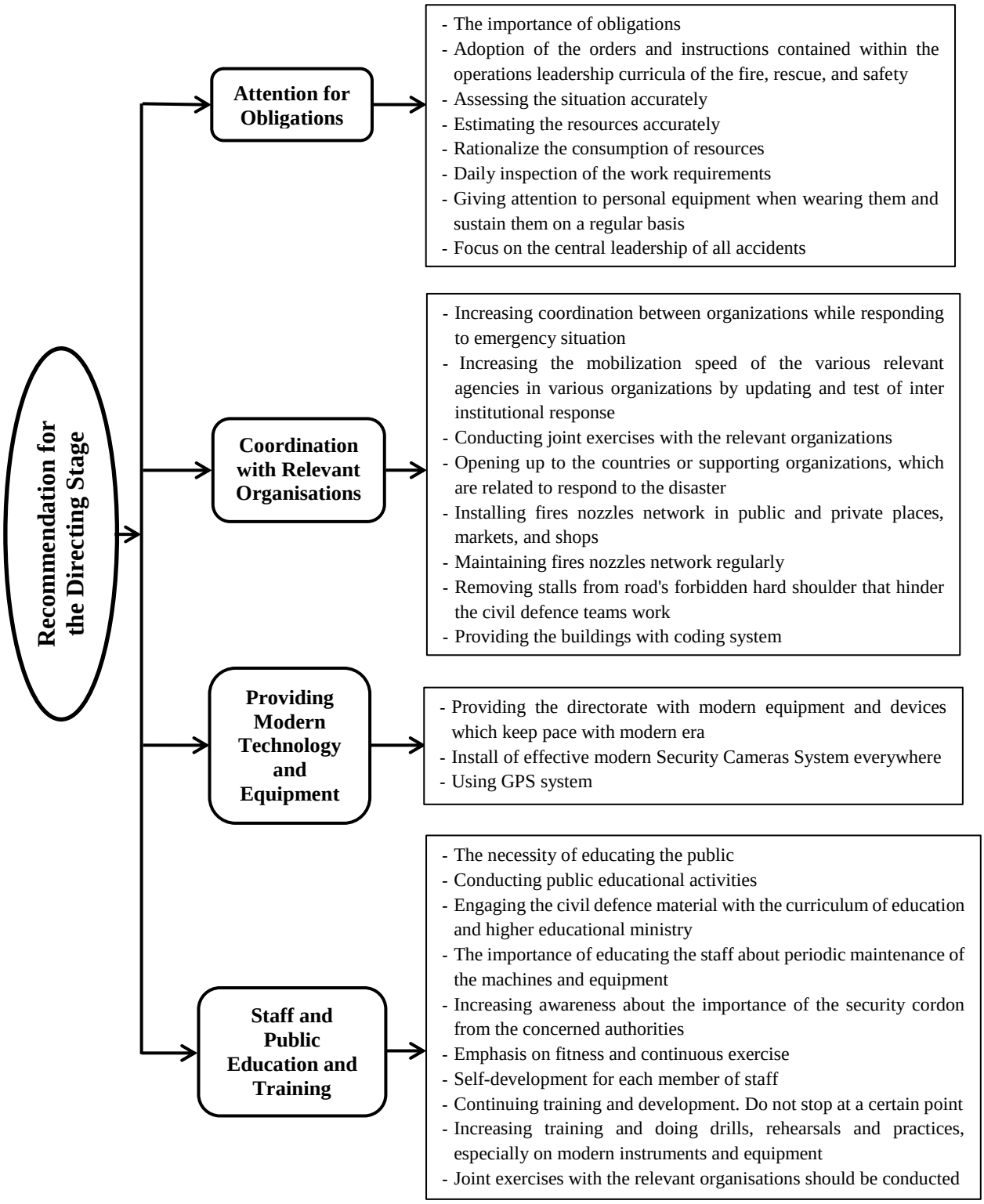


Figure 4.19 Recommendations for the Directing Stage

4.6 Interview Analysis – Controlling Stage

As the research looks further at the controlling stage of the civil defence administrative system, many sub-themes have emerged from experts' responses. The following subsections will briefly discuss these sub-themes.

4.6.1 Weaknesses during the Controlling stage

Different weaknesses related to the controlling stage were brought up by the experts. Figure 4.20 showed the controlling sub-themes which will be discussed in the following subsections.

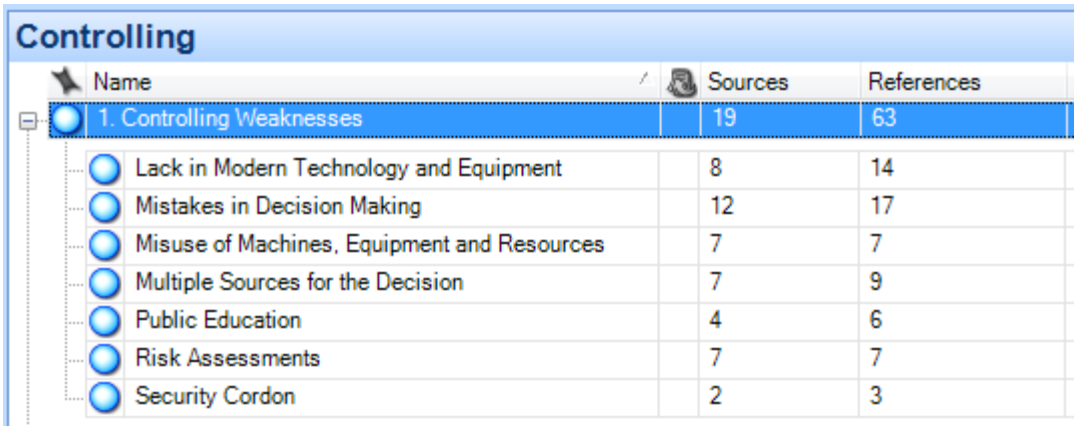


Figure 4.20 Nodes for Controlling Weaknesses

4.6.1.1 Lack in Modern Technology and Equipment

To respond swiftly and efficiently to disaster resulting from terrorism, modern technology and equipment are crucial to act immediately. This technology might enhance the information flow both to and from stakeholders. So, the **absence of a Security Cameras network** which is important to watch what happened first from all directions is considered the main challenging facing the controlling stage (E4, E12, and E20). However, interviewee E3 raises different challenges: *"the **absence of a central alarm system**"*. According to interviewee E20, the controlling process becomes more difficult because *"**specialised firefighting aircraft do not exist**"* because of their role in the speed of response to incidents. As controlling aims to measure, maintain or improve response performance, such a lack of modern technology might hinder the control process to accomplish the response objectives and the devised plans to achieve such objectives.

Regarding the existence of GPS system, interviewee E19 emphasised the *"**deactivation for the GPS system in rapid response to the incident**"*, while interviewee E7 stressed the *"**lack of***

GPS system for fire vehicles*"*. Such lack is due to *"**non-participation in the satellite system that is used for disaster management**"* (E7).

In terms of risk assessments' equipment, interviewee E19 mention that there is a *"**lack of modern equipment for risk assessments when the event occurs**"*. Interviewees E16 supports this point and asserts on *"the **lack of modern and effective devices to detect explosives**"*. This shortage in such important devices might lead to serious consequences, as mentioned in interviewee E4 response: *"dual Bombings because of a security breach due to the lack of effective checking devices"*. Interviewee E4 also criticised the *"**lack of a coding system for buildings**"* which might lead to increase the chaos while responding to the disaster.

4.6.1.2 Mistakes in Decision Making

A smooth and effective decision-making process can be very difficult, particularly in a disaster time, due to the dynamic environment of disasters. In this regard, interviewee E4 and E16 have the same opinion regarding the *"**failure in decision-making**"*. Interviewee E10 attributed these negative points as being about "***relying on staff with little experience****"*. Interviewee E1 added other reasons such as *"**improvising in decision-making and implementing the resolution without advice**"*. Interviewee E11 went on to assert that there is an "***emotional impact in taking some decisions****"*. This might negatively affect the control process. A clear indication is given by interviewee E15 that there was *"**weakness in the training on commanding, controlling and decision-making**"*. Such weaknesses might lead to "***ineffective determination of the causes of accidents since evidence can be destroyed; this work needs precision and professionalism in conducting the investigation****"* (E10). This is supported by interviewee E6, E11, E22-E24, who highlight the *"**lack of adequate knowledge and expertise among the officers and staff members in how to deal with the central leadership at the scene**"* and *"**lack of experience in controlling the disaster site**"*. Based on interviewee E3's responses, there is *"**inaccuracy in giving orders**"*. However, interviewee E20 pointed out the problem of imposing punishment on staff as, for example, *"**addressing negatives after the analysis of the incident is not effective, people need incentives and a focus on the positives rather than the negatives**"*. Conversely, interviewee E11 also shed light on the punishment problem, as he believes that there is sometimes a "***lack of using the powers to punish uncommitted staff as a result of their negligence****"*. Interviewee E11 added another point of weakness by stating: sometimes there is *"**tepidity after responding to the incident for a period of time and lack of obeying received orders and instructions and stationing within their competence and duty**"*. Moreover,

interviewee E3 went on to assert that there is an *"**exaggeration in logistical supply**"*. This might lead to a waste of resources.

4.6.1.3 Misuse of Machines, Equipment and Resources

To keep the machines and equipment in good repair and operating safely and efficiently, continuous maintenance is vital, especially for machines and equipment that are used in responding to the disaster. According to Interviewee E12, there is a *"**lack of continuous maintenance of machines and personal equipment**"*. Interviewee E4 confirmed this point and added an *"**absence of periodic maintenance of the equipment and personal supplies**"* is considered one of the main weaknesses in controlling the response process. However, interviewee E3 also adds that *"**incorrect usage of devices and equipment**"* may lead to damage being caused much faster for these machines. Interviewee E6, E22-E24 pointed out that sometimes there is a **failure in using appropriate resources in the response**, which might worsen the situation.

4.6.1.4 Multiple Sources for the Decision

Undoubtedly, responding to disaster demands critical decisions that might be made in awkward circumstances. Despite the fact that disaster decision-making is typically posed as a series of dilemmas, **presence more than leadership at the scene will increase the problems and cause the failure to obtain satisfactory results** (E11). Interviewee E13 agreed with E11 that the *"**intervention of the senior leadership from other organisation**"* have a negative impact on controlling process. Interviewee E21 asserts that there is a *"**lack of knowledge about who is responsible at the scene**"*. Interviewee E4, agreeing with E21's view and gave good reasons for this problem: *"multiple sources of the decision at the scene, especially from the rest of the organisations"* due to *"the **multiplicity of responsible agencies at the scene**"*. Interviewee E3 supported this view and complained about *"the permission to enter the security cordon is subject in some cases to moods"*. According to interviewee E12, this problem appeared due to the *"**overlapping in the business with the rest of organisation at the scene**"*. However, interviewee E19 raises different challenges: *"**response delay for the relevant organisations to take the necessary actions in responding to the event**"*. Such delay might cause loss a lot of people lives.

4.6.1.5 Public Education

To reduce the vulnerabilities to any disaster, public awareness and education should be targeted as main priorities of any disaster management action. In interviewee E3's opinion, there is *a*

*"**lack of citizen awareness of the necessity of non-interference and the crowd near the scene**"*. Interviewees E12 and E13 have the same opinion of *"**citizens intervention at the scene**"*. They criticise this irresponsible action because it could negatively affect the controlling process at the scene. Interviewee E3 on the other hand, raises a different challenge, regarding making room for emergency vehicles, by stating, *"**on the roads, there is no system to make room for emergency vehicles**"*. However, interviewee E8 raises different challenges: "false reporting" and "not to give the exact address when reporting".

4.6.1.6 Risk Assessments

As each disaster is a unique event, it requires careful assessment. To manage the immediate response properly, risk assessments can be considered a vital process to reduce the underlying risk factors. Interviewees E3 and E4 focused on this by stating that there is *"**failure in conducting proper risk assessments and mapping**"*. Based on interviewee E19's opinion, this problem occurred because of the *"**lack of modern equipment for risk assessments when the event occurs**"*. However, interviewee E6 gave a different reason for this problem: *"**the scale of the disaster is incorrectly estimated**"*. Interviewees E22-E24 also confirmed this point.

4.6.1.7 Security Cordon

By cordoning off the disaster area, the police will probably ensure that the disaster responder's teams can do their job quickly and smoothly. According to interviewee E3 and E9, there is a **failure in applying the security cordon properly and it might be applied with moods**. Consequently, the response effort might disturb, perhaps because of citizen irresponsible intervention, as mentioned in section 4.3.1.1. Interviewee E3 raised another challenge, which is the *"**permission to enter the security cordon is subject in some cases to moods**"*. This could be a cause of late response to the incident.

To sum up, seven points of weakness at the controlling stage have been extracted from interviewees' transcriptions and discussed in this section. A summary of controlling weaknesses' sub-themes are presented in Figure 4.21. In the section that follows, Strengths during the controlling stage will be debated.

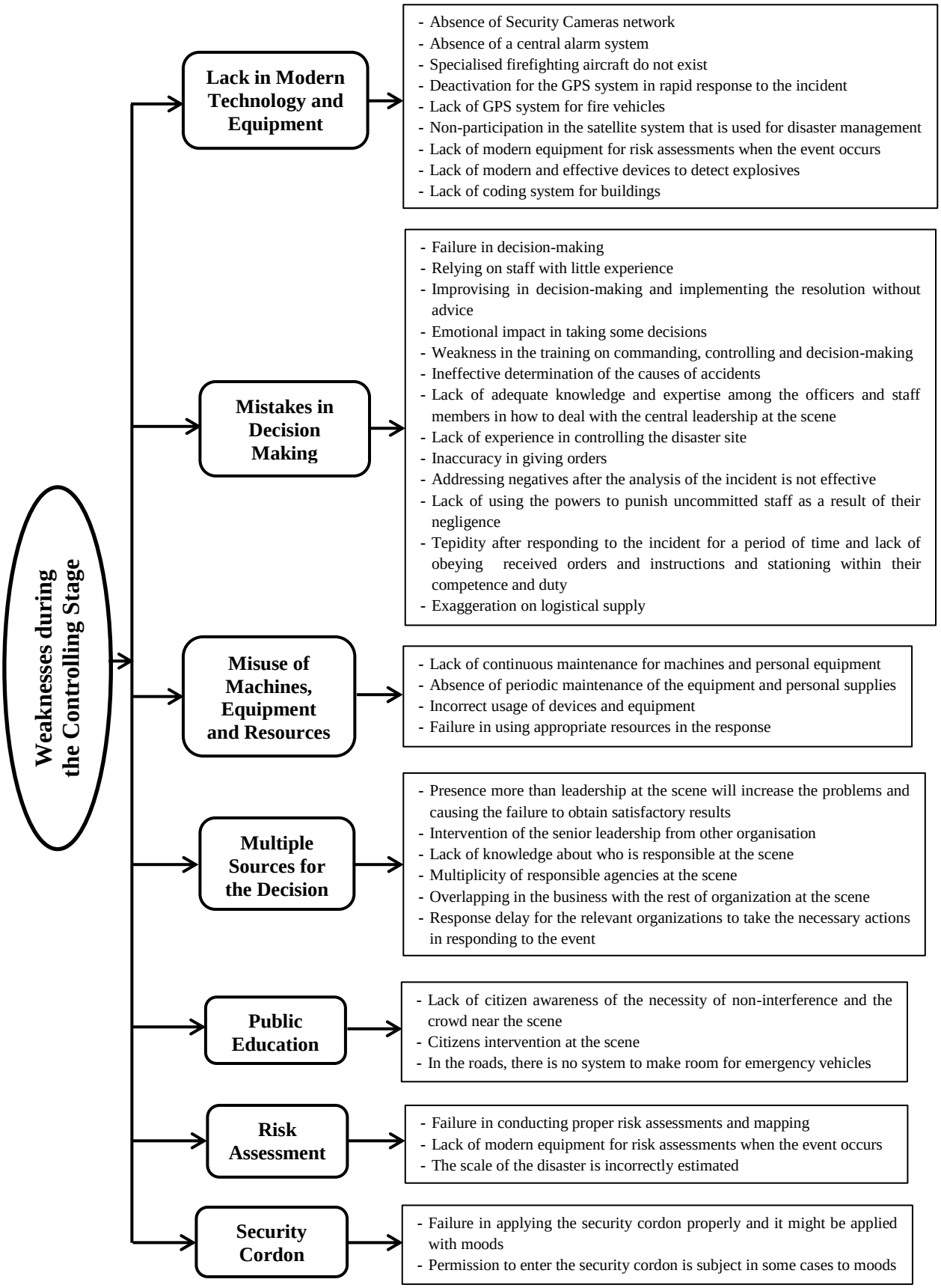


Figure 4.21 Weaknesses during the Controlling Stage

4.6.2 Strengths during the Controlling Stage

Although the controlling process has a lot of points of weakness, it also has points of strength as presented in Figure 4.22. In the following three subsections, the controlling strengths will be discussed briefly.

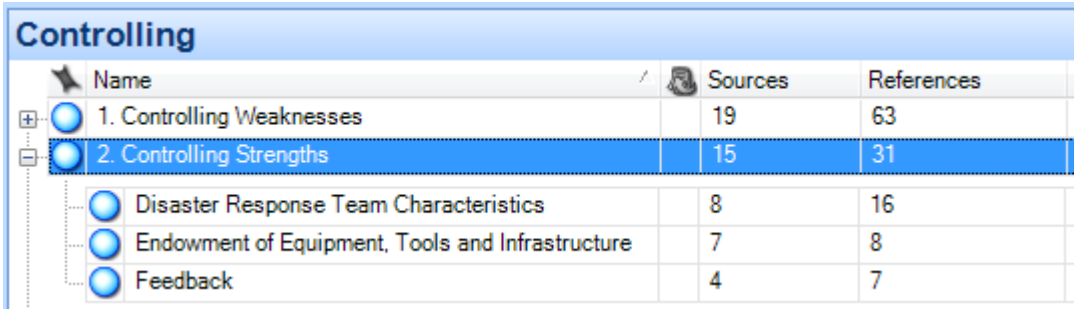


Figure 4.22 Nodes for Controlling Strengths

4.6.2.1 Disaster Response Team Characteristics

Relying on experienced staff tends to be one of the most important things that support the control process while responding to a disaster, particularly with decision makers. Interviewee E1 believes that *"**decision making after consultation with the rest of the staff**"* is considered a major advantage for the control process, while interviewee E15 mentioned that *"**relying on an official who has experience, personality, and decision-making ability**"* is vital for the control process. Interviewees E10, E11, and E16 agreed with this point and acknowledged the **accumulated experience** and **work knowledge** for the disaster responders as being critical in the response.

With regard to **good management and control at the scene**, interviewees E3, E11, E15, E16, and E19 mentioned that experienced staff play a significant role in contributing to an efficient and effective response. Interviewee E19 stated that *"**there is better coordination, which is also faster, between the older officers and sectors' officials within the incident area**"*, but at the same time *"**the experienced staff tend to have more authority to act**"* (E16). Further, interviewee E12 confirmed that *"**the orders are implemented strictly**"* due to the existence of *"**supporting laws and regulations**"* (E16).

In terms of response speed, interviewees E3 and E19 believe that the speed of response is the first priority for the responders, in addition to **the chivalry and magnanimity**, which is the most common feature between disaster responders. On this point interviewee E19

acknowledged the *"**quick and serious response to the incident** and providing the necessary supplies to control the incident" were contributing factors to the success of the response*.

4.6.2.2 Endowment of Equipment, Tools and Infrastructure

Effective disaster response is facilitated by using robust and well-functioning equipment to support affected populations. In this regard, Interviewees E3, E10 and E12 have the same perspective. For example, there is an *"**availability of materials and equipment**"* (E3) in addition to the *"…….**good devices and machines**"* (E10) as well as devices can be used to support *"**filming the scene during the control process and after suppressions**"* (E12).

Interviewee E3 on the other hand, highlights as a strength that *"**most of the area are covered by civil defence centres**"*. Similarly, interviewees E6, E22-E24 mention, in the same context but in a general way that *"each centre within the directorate is responsible for a specific geographical area. It has **full knowledge of all the details of this geographical area and projects** that are classified according to the applicable classification (A, B, C) according to the importance of the building or project"* (see section 4.10.4). Such knowledge might offer a good support for controlling process.

4.6.2.3 Feedback

To overcome weaknesses that happened in past response to incidents, good feedback and assessment will probably provide the common pitfalls, mistakes, obstacles that might face disaster responder in future. To do so, interviewees E4, E12, and E20 assert on the **analysing process to get the feedback**. This can be seen by these responses, *"**convening meetings after each large accident for the purpose of determining weakness and strength points and getting the feedback**", "**analysing the incident after the response to the disaster and find the positive and negative points in the response and trying to address the negative points**", "**filming the scene during the control process and after suppressions in order to identify the cause of the accident and take advantage of it in the analysis after the incident response process**"*. Further, interviewee E20 puts emphases on the *"**reports submitted for any accident**"*, because they are very vital to determine the points of weakness while responding to the disaster. Interviewee E14 added another strength, *"**the existence of a ministerial form which is responsible for the staff evaluation**"*. Such evaluation might encourage them to improve their performance.

This section has discussed the three themes of strength for the controlling process. Various sub-themes have been revealed from this discussion as shown in Figure 4.23. The next section will discuss recommendations for the controlling stage.

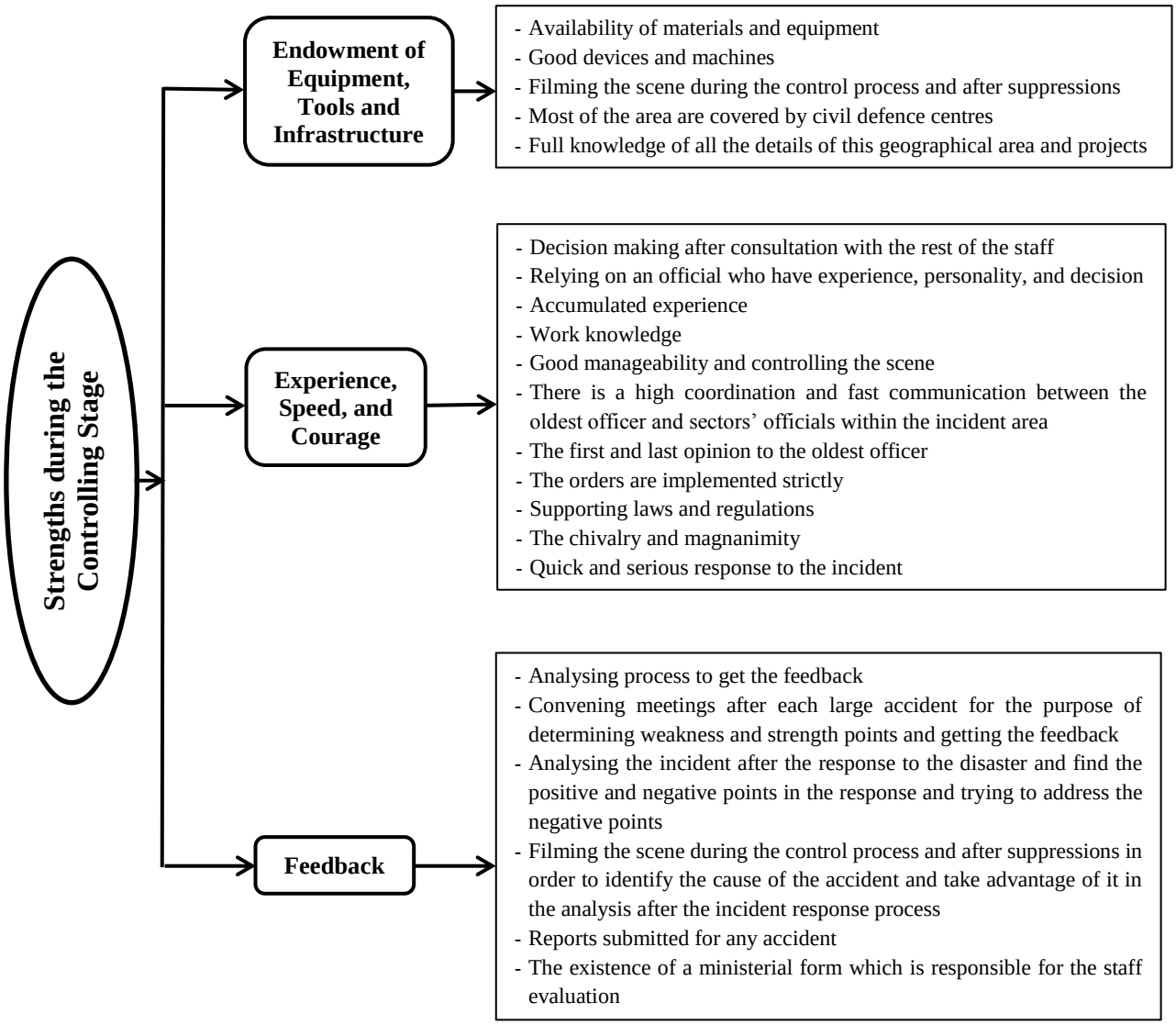


Figure 4.23 Strengths during the Controlling Stage

4.6.3 Recommendations for the Controlling Stage

Having discussed what is the weaknesses and strengths in the current Disaster Response Administrative System, the experts has been asked to for any recommendations to improve the controlling process in the future in order to complete the evaluation for the current administrative system. In the next sections, these recommendations as showed in Figure 4.24 will be discussed.

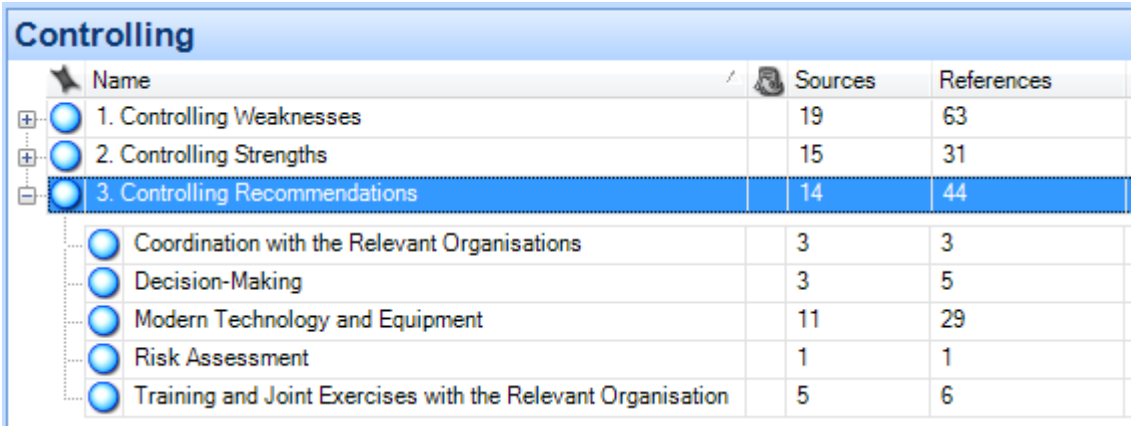


Figure 4.24 Nodes for Controlling Recommendations

4.6.3.1 Coordination with the Relevant Organisations

To facilitate an effective response and to avoid confusion, different actors and entities should be operated in a coordinated and timely manner by avoiding gaps. Such gaps might be avoided by conducting skilful coordination among the wide range of potential stakeholders. To do such, interviewee E19 suggested that *"**higher coordination with the relevant organisations in the incident**"* is critical to avoid confusion. In terms of coordination with security authority, interviewee E12 proposed *"**activation of the role of the Yellow Ribbon (the security cordon)** during the incident to keep the criminal evidence at the scene"*. Besides that, interviewee E3 asserted that *"**evacuating the streets from vehicles in case of emergency**"* may provide assistance during responding to the disaster.

4.6.3.2 Decision-Making

It could be argued that smooth and effective decision-making process might be crucial for disaster responders to provide a fast response. To do so, different recommendation were provided by experts to enhance the response process. For example, Interviewees E1 stated the need for *"**stopping the improvisational behaves**"* and *"**assessing the situation accurately**"*.

Moreover, despite the fact that the importance of centralization, interviewee E10 put emphasis on the flexibility in decision making. However, interviewee E11 proposed the idea of *"**stop holding periodic movements without staff desire** because of its negative impact on the psychological state of them"*. He also highlighted the importance of *"**adopting the principle of reward more than the principle of punishment** to raise and sustain morale"*.

4.6.3.3 Modern Technology and Equipment

It seems to be considerable attention has been given in recent years worldwide to the modern technology such as remote sensing satellite data as it might provide urgent assistance and useful information in all phases of the disaster management cycle. Further, due to the critical of the actions taken in the initial minutes of the disaster, modern technology and equipment might have a significant role while responding to the disaster. In order to gain proper controlling, experts stressed the importance of modern technology and equipment in their responses. Interviewee E2 recommended *"**continuing support of modern equipment**"*. Interviewee E6, E23 and E24 support this suggestion and proposed to **keep up with the world development in the field of response to the disaster**. To provide a fast and effective response, interviewees E2, E6, E7, E12, E15, E19, and E21-E24 are of the opinion **introducing modern technologies in the field of rescue and firefighting for disasters**. Within the same context, interviewee E19 sheds light on *"**equipping with modern heavy rescue equipment**"*. Besides that, interviewee E3 asserted that *"**providing aircraft system that facilitates the control process**"* as well as *"**linking the directorate with satellite system and activate the subscription**"* might enhance the controlling process. Interviewee E7 supported this view and proposed the idea of *"**managing the disaster by signing up for satellite system**"*. This point was supported by interviewee E15, who stressed on *"**using GPS system in the machines used for responding to the disaster**"*. Interviewee E21 added, *"**invest all types of modern technology and scientific research in strengthening capacity to respond to disasters and risk reduction**"*.

In terms of telecommunications and informatics, interviewees E6, E23, and E25 assert the point of **developing of telecommunications and informatics in the provinces**. Such development might be achieved through "***equipping the province with modern and effective monitoring systems***" (E15), "***providing the country with Security Cameras network***" (E2, E7).

4.6.3.4 Risk Assessment

If a hazard occurs, risk assessment could play a significant role in identifying, analysing, and evaluating the risk and what could happen. To foster this role, interviewee E21 assert on

*"**identifying, assessing, and monitoring all types of disaster risks, the priority of these risks according to its geographical distribution and strengthen the early warning equipment**"*. By doing such process, the impacts from hazards could be reduced.

4.6.3.5 Training and Joint Exercises with the Relevant Organisations

To ensure rapid and effective disaster response to the extreme event, the response mechanisms need to strengthen and develop by conducting training and joint exercises with the relevant organisations. Interviewee E10 confirm this point and asserted that *"**training and decision-making practices**"* seems to be vital for controlling process. In a similar way, interviewee E19 proposed *"**increasing the competent cadres and conducting joint exercises with the relevant organisations**"*. Interviewee E11 went on to add two suggestions related to *"**holding periodic seminars and meetings with all the officers and staff members in the field of controlling** and administrating the accident site in order to teach them how to deal with orders and instructions"* and *"**circulating the instructions concerning accidents management and control** by using official documents and punish all opposes to such documents"*. Interviewee E21 raised a new important point in terms of using *"**a comprehensive assessment of the risks, vulnerability, and the available capacity at all levels and by multi-region**"*. Moreover, interviewee E1 put emphasis on *"**accurate resource estimating**"* due to its role in the preservation of resources.

To sum up, various recommendations have emerged from the discussions in this section. A summary of the controlling recommendations' sub-themes is illustrated in Figure 4.25 below. In the next section, controlling stage summary is provided.

4.6.4 Controlling Stage Summary

In brief, it can be seen that there are different strengths, weaknesses and recommendations that have been highlighted in this stage. It is apparent that, in the controlling stage, some the strengths are also the weaknesses, and vice versa. In the next section, a summary of the interview analysis is provided.

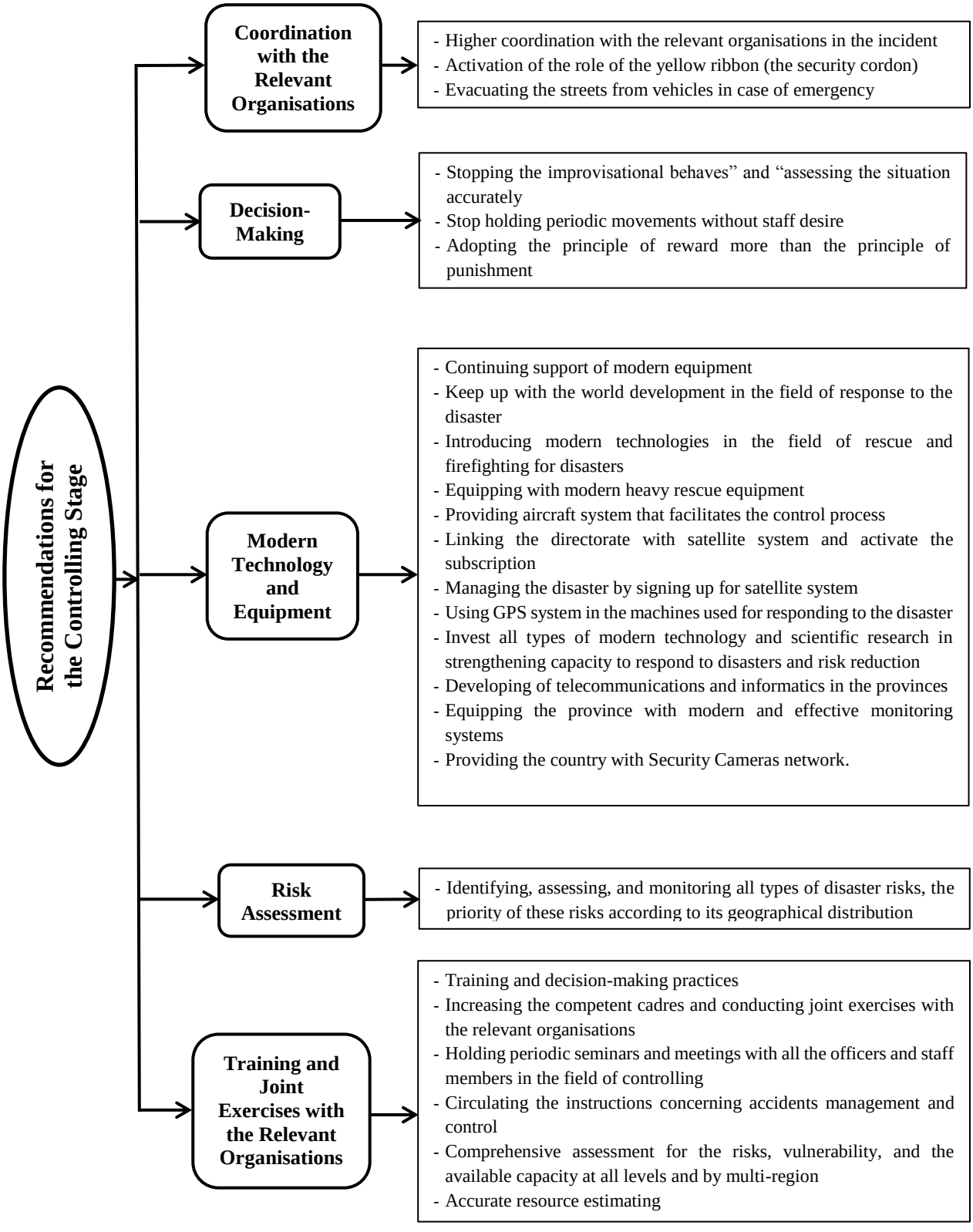


Figure 4.25 Recommendations for the Controlling Stage

4.7 Summary of the Interview Analysis

Interviews about the planning, organising, directing, and controlling stages were analysed in greater detail after categorising every stage into the main themes: Weaknesses, Strengths, and Recommendations for disaster response management. Every main theme has also sub-themes, which have been extracted from interviewees' responses. In the next section, the analysis of the importance of Disaster Response Management factors against their implementation will be presented.

4.8 Implementation of Disaster Response Management Factors

After obtaining the elements of good practice disaster response management and categorising them by the four management stages from secondary data (please refer to Section 2.10 in the literature review and Appendix B, C), the questionnaire survey has been conducted based on these elements. The questionnaire survey will help the researcher to evaluate their implementation in addition to identifying the importance of these elements (see Appendix E for questionnaire) through conducting a gap analysis. The following sections move on to describe in detail the analysis of the importance against the implementation of these factors at the four management stages (Planning, Organising, Directing, and Controlling). In this section, the gaps between levels of importance and implementation will be presented which further confirms the limited implementation of several elements of good practice disaster response management. Overall gaps during disaster response management in Iraq will be identified by using these elements.

4.8.1 Implementation of Disaster Response Management Factors at the Planning Stage

4.8.1.1 Analysis of the Importance of Planning Process Factors against their Implementation

In the themes of the planning process, as shown in Figure 4.26, a large gap has been noticed between the importance of "prior planning of public shelters" and its implementation. The gap has been narrowed compared with the aforementioned one at "flexibility in switching to alternative plans", "human settlement relocation from disaster prone areas", "well-planned emergency relief supply system", "prior planning of logistic centres", and "government unity of leadership to plan as a whole" factors. However, no gap has been revealed for the "systematically maintaining disaster and loss inventory" factor.

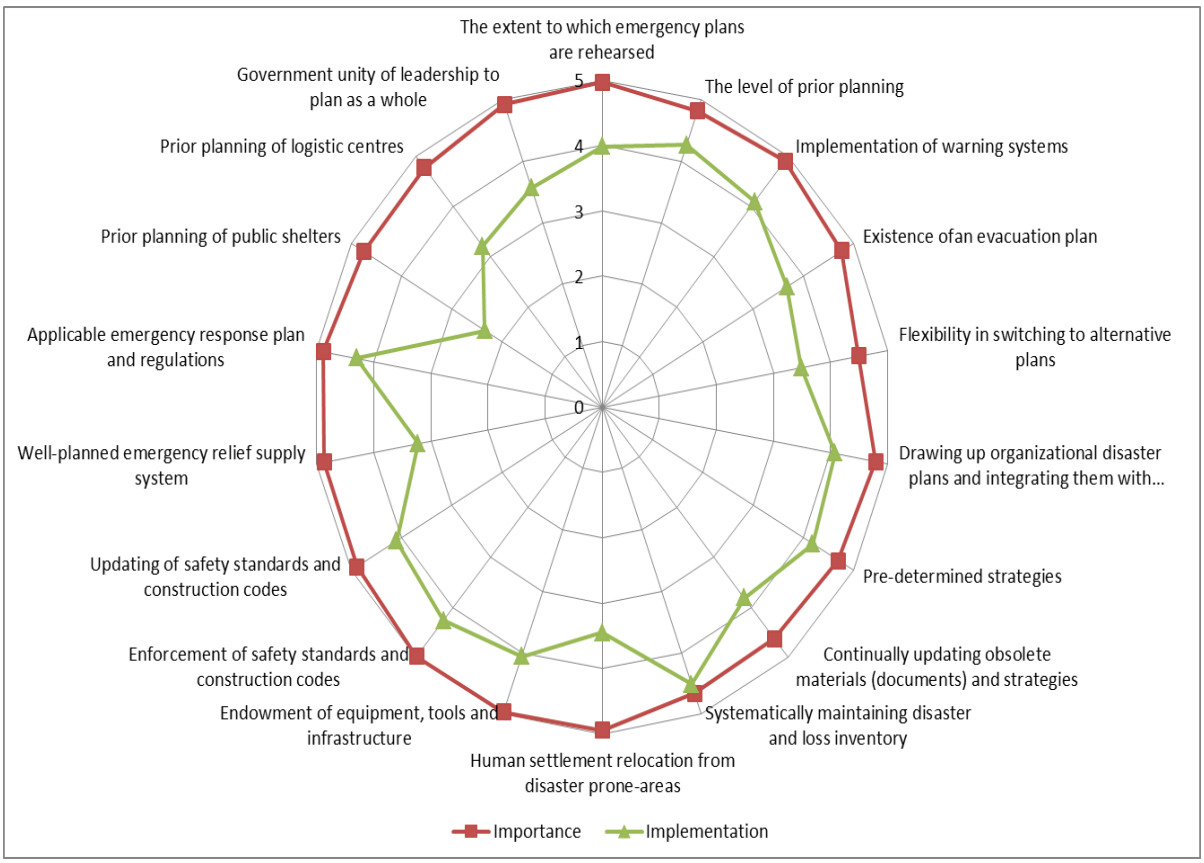


Figure 4.26 Comparison of the Importance of Planning Process Factors against their Implementation at the Planning Stage

4.8.1.2 Analysis of the Importance of Financial Resources Factors against their Implementation

Figure 4.27 illustrates financial resources factors. It can be clearly seen from Figure 4.27 that "reserve funds for institutional strengthening" and "budget mobilisation" factors have a large gap. These two gaps are relatively equal, but at the same time, they are three times as large as the "budget allocation" factor gap.

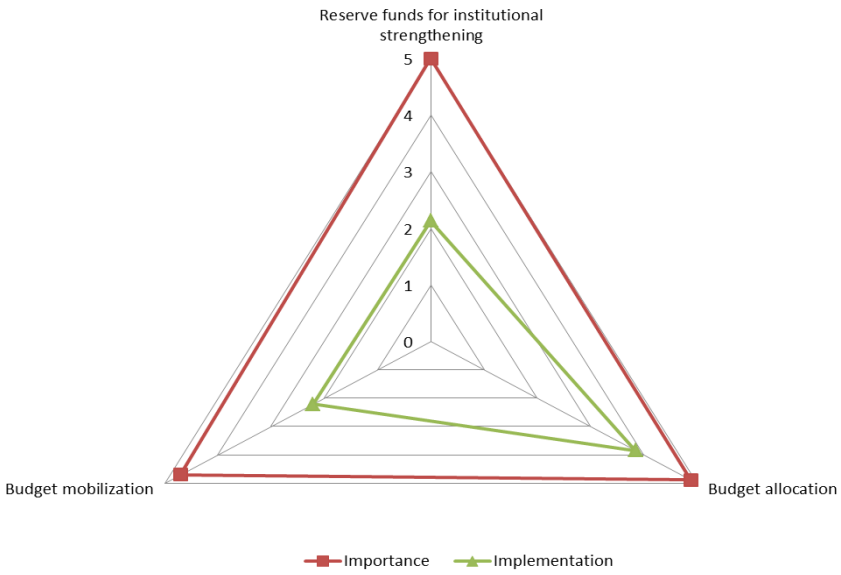


Figure 4.27 Comparison of the Importance of Financial Resources Factors against their Implementation at the Planning Stage

4.8.1.3 Analysis of the Importance of Supporting Ordinances Factors against their Implementation at Planning Stage

It is clear from Figure 4.28, which shows the supporting ordinances factors, that the four factors have a similar gap.

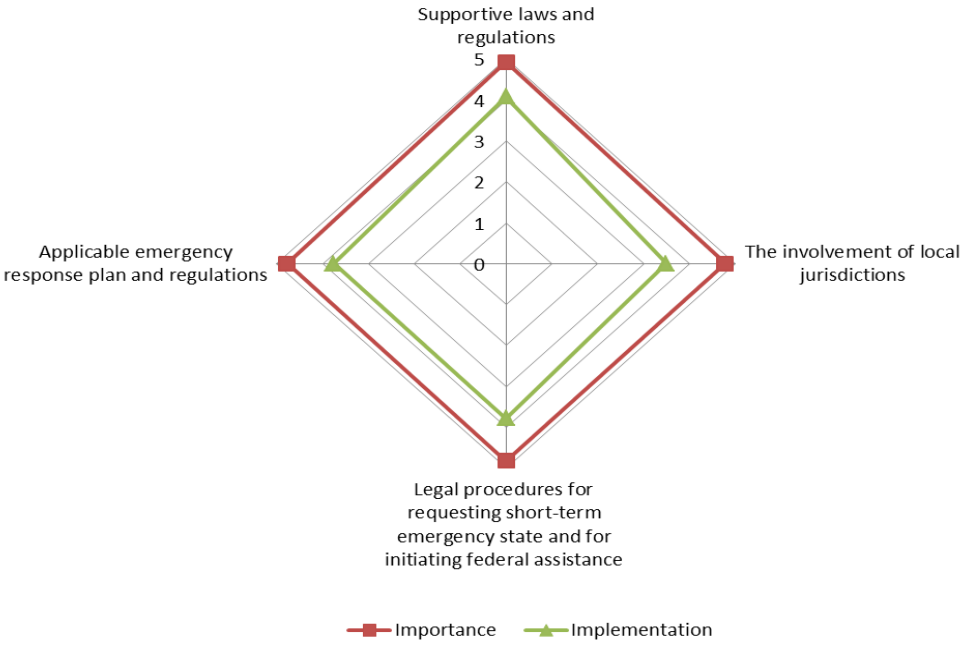


Figure 4.28 Comparison of the Importance of Supporting Ordinances Factors against their Implementation at the Planning Stage

4.8.1.4 Analysis of the Importance of Education about Disaster Risk Factors against their Implementation at the Planning Stage

Regarding the factors of education about disaster risk, which is demonstrated in Figure 4.29 below, the factor "undertaking public educational activities" has the smallest gap compared with the other factors. On the other hand, the factor that has the largest gap is "community preparedness and training". The rest of the factors are quite similar to each other and also have a large gap.

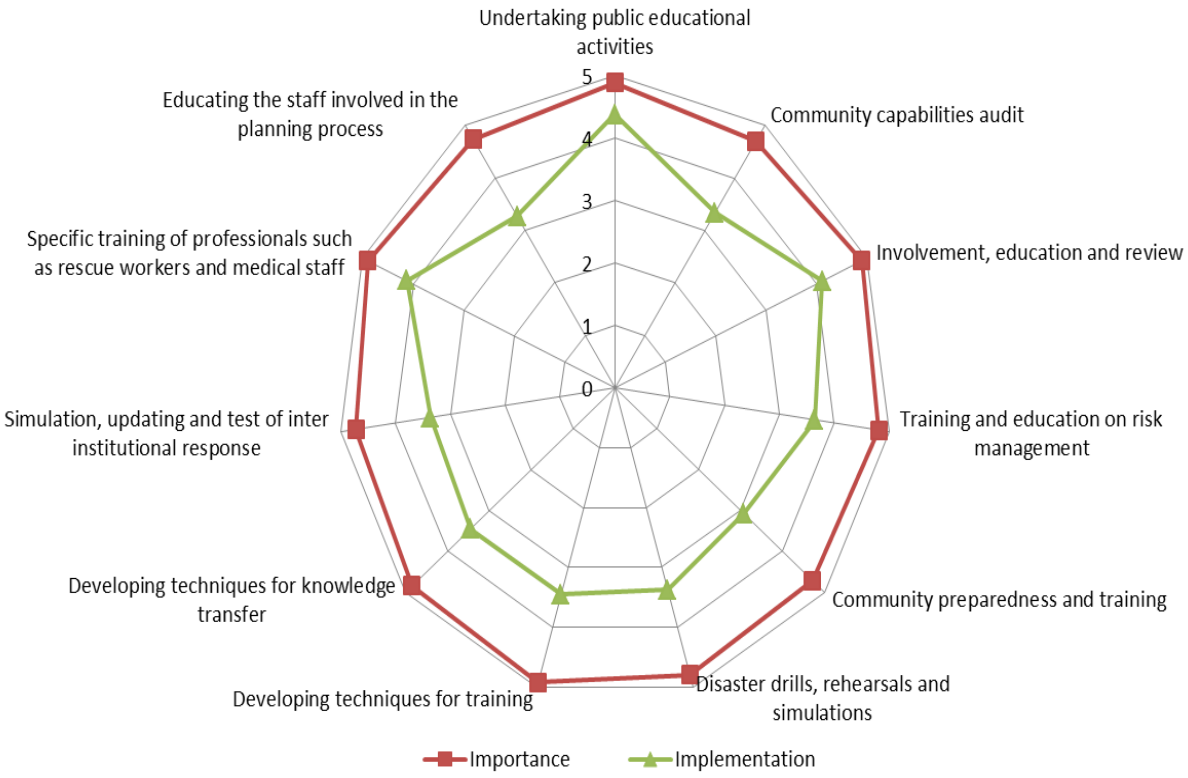


Figure 4.29 Comparison of the Importance of Education about Disaster Risk Factors against their Implementation at the Planning Stage

4.8.2 Implementation of Disaster Response Management Factors at the Organising Stage

4.8.2.1 Analysis of the Importance of Coordination Problems Factors against their Implementation

Figure 4.30 shows coordination problems factors within the organising stage. According to Figure 4.30, two large gaps have appeared at the "volunteer management" and "Reasonable organisational structure and clear awareness of responsibilities" factors. Though the gap has disappeared with the other two factors, "search and rescue" and "coordination between departments within the organisation", the rest of the factors are quite similar to each other.

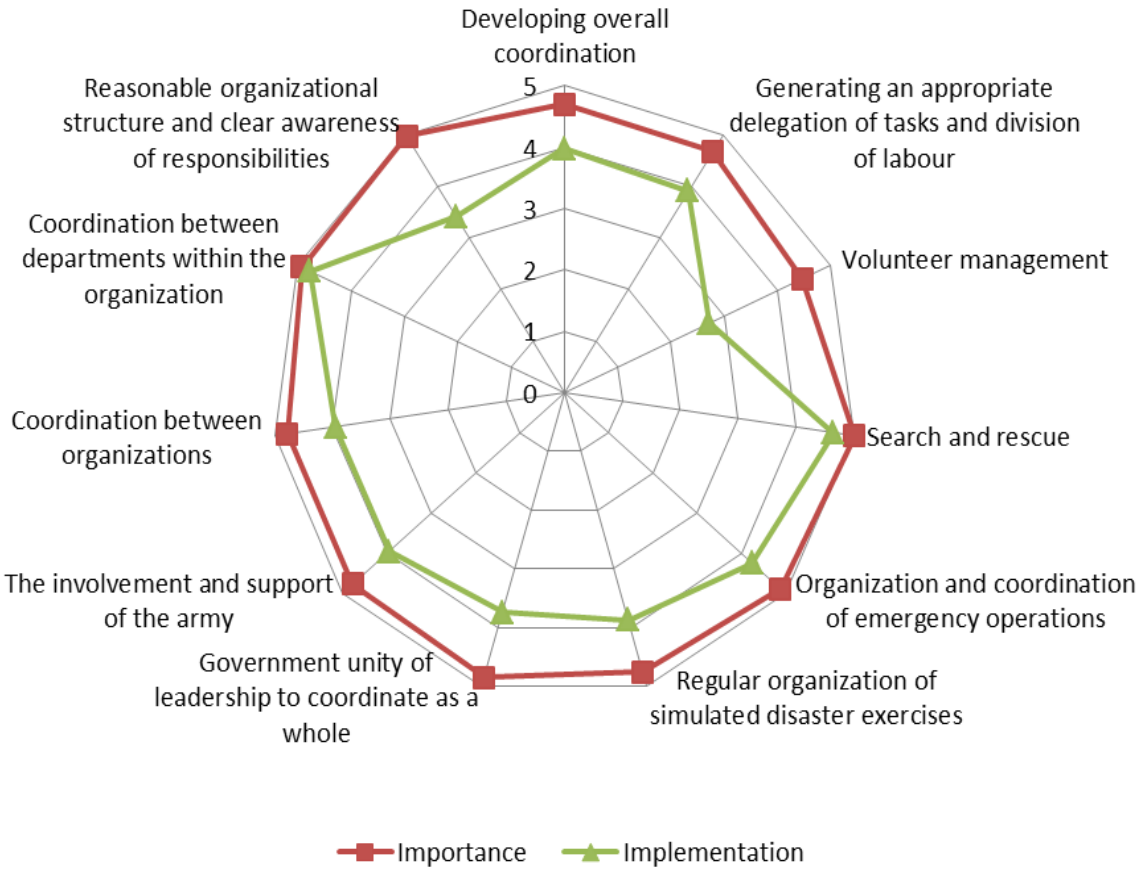


Figure 4.30 Comparison of the Importance of Coordination Problems Factors against their Implementation at the Organising Stage

4.8.2.2 Analysis of the Importance of Problem of Interplay Factors against their Implementation at the Organising Stage

As highlighted in Figure 4.31 the majority of the respondents had no opinion about most of the factors except "community emergency response teams", "establishing formal linkages between involved groups", and "establishing informal linkages between involved groups". Such a large number of 'no opinion' answers is due to not having the authority to conduct such organisational activity, such as formulating memoranda of understanding and mutual aid agreements as well as following protocols with agents, because this authority is limited to the Ministry of Interior. At the same time, the rest of the factors have a large gap also.

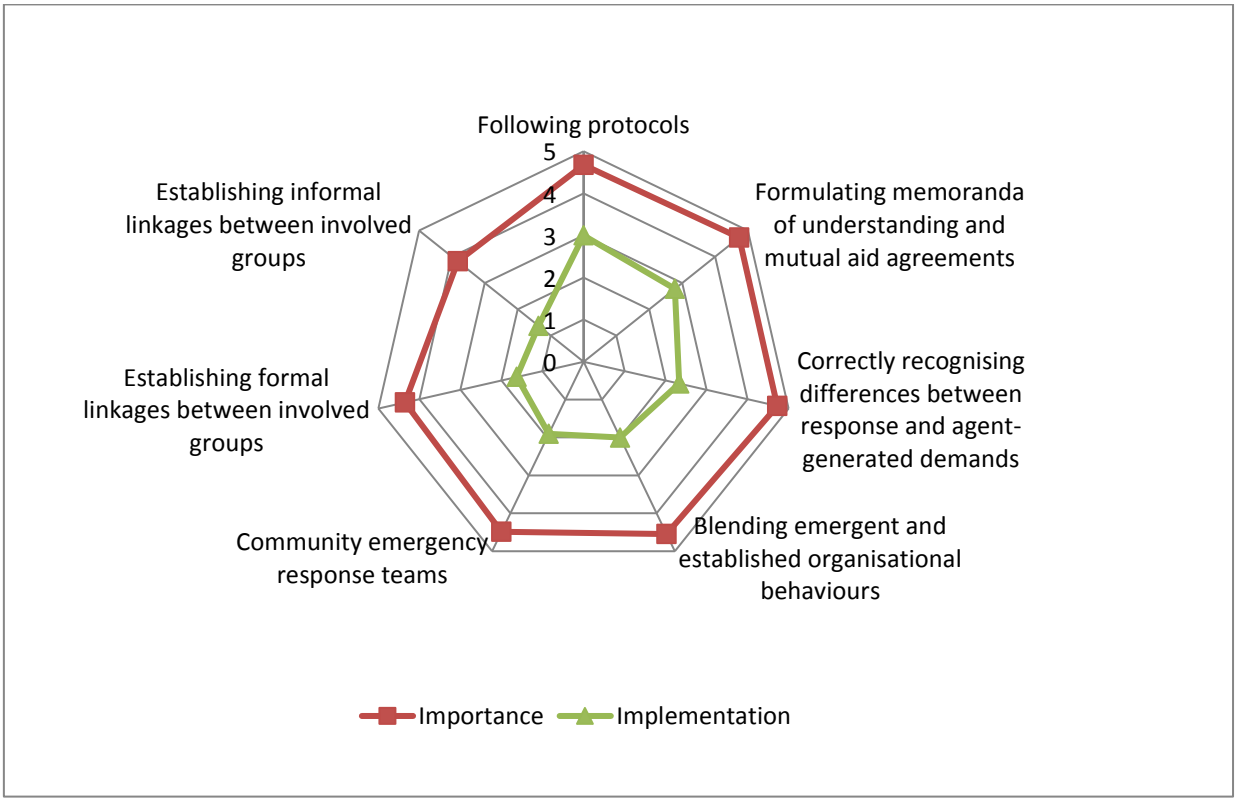


Figure 4.31 Comparison of the Importance of Problem of Interplay Factors against their Implementation at the Organising Stage

4.8.2.3 Analysis of the Importance of Hierarchy and Centralization Factors against their Implementation

Within the theme of hierarchy and centralization, all its factors, except for "clearly defined goals and commitments by key stakeholders", have a similar gap. It can be noted that the

excepted factor has a relatively larger gap than the gaps of the other factors. This can be seen clearly in Figure 4.32 below, which shows the factors of hierarchy and centralisation.

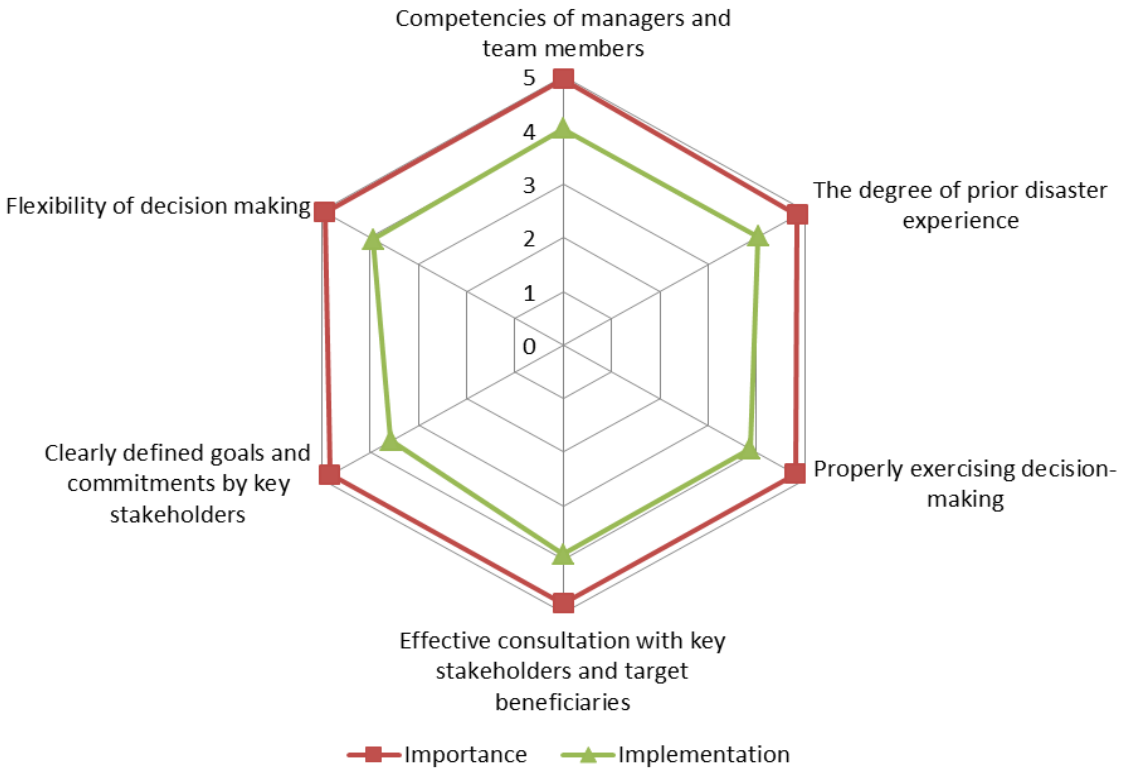


Figure 4.32 Comparison of the Importance of Hierarchy and Centralization Problems Factors against their Implementation at the Organising Stage

4.8.3 Implementation of Disaster Response Management Factors at the Directing Stage

4.8.3.1 Analysis of the Importance of Command Centre Factors against their Implementation

Figure 4.33 indicates to command centre factors within directing stage. There are two noticeable gaps at “non-EOC organisations being mobilised for emergency response” and “hazard monitoring and forecasting”. However, the gap has been vanished at “key officials being briefed” and “clear procedure of reporting and submitting information”. The rest of factors seem to be having a similar gap.

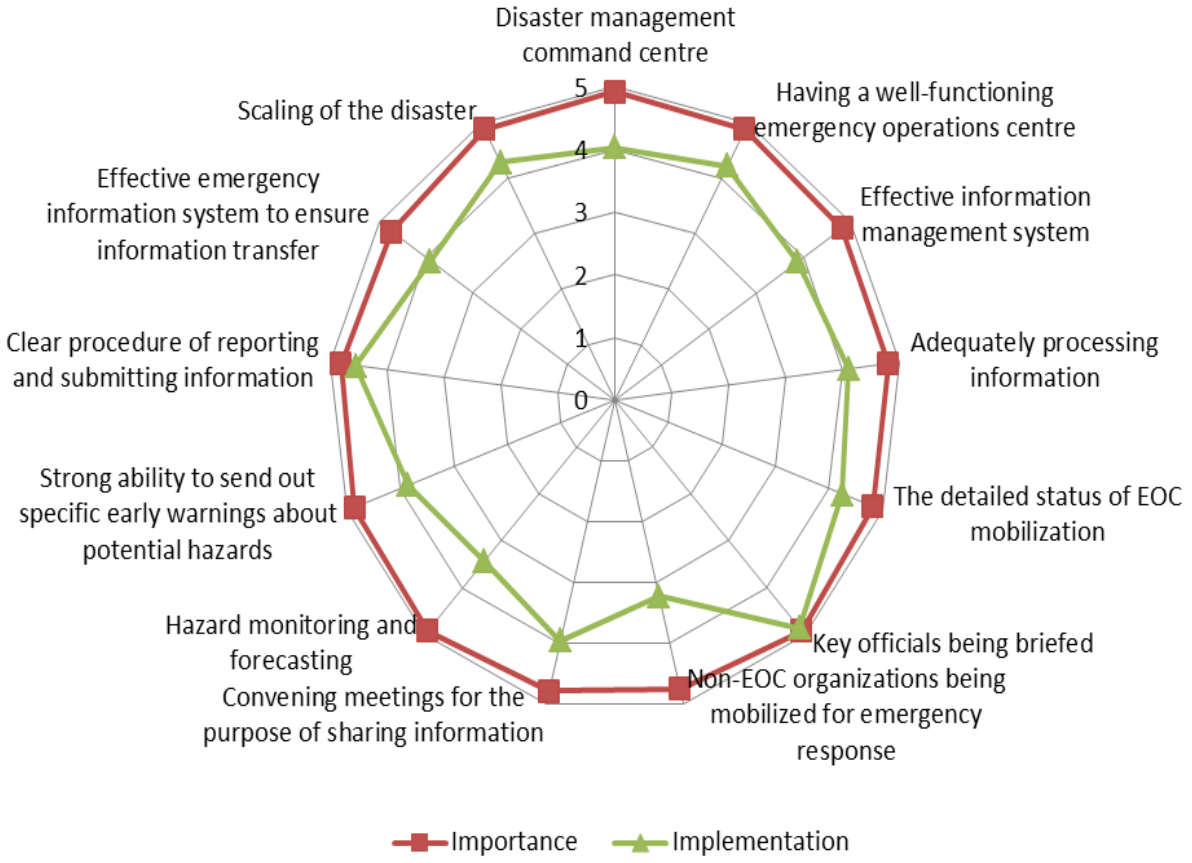


Figure 4.33 Comparison of the Importance of Command Centre Factors against their Implementation at the Directing Stage

4.8.3.2 Analysis of the Importance of Communication Factors against their Implementation

Figure 4.34 illustrates communication factors. It can be clearly seen from Figure 4.34 that "Providing appropriate reports for the media" and "transferring information about the disaster to the public from the organisation or vice versa" factors have a large gap. These two gaps are relatively equal, but at the same time, they are three times as large as the "emergency public information, Information (communication outside organisations)" and "public information and community participation" factors gap. Moreover, as can be seen, the two factors "effective communication mechanisms, communication (inside organisations)" and "information sharing between the various relevant agencies in various organisations" have a similar gap.

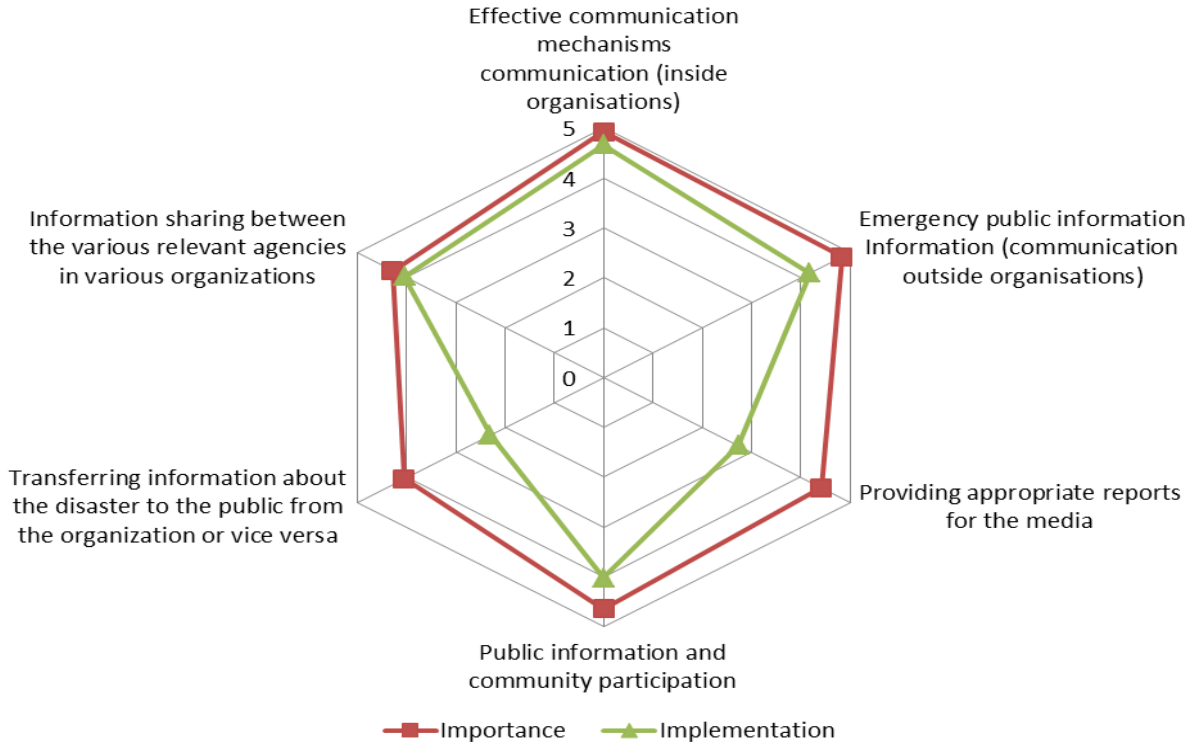


Figure 4.34 Comparison of the Importance of Communication Factors against their Implementation at the Directing Stage

4.8.3.3 Analysis of the Importance of Providing the Right Relief Supplies Factors against their Implementation

As shown in Figure 4.35, a large gap has been noticed between the importance of "application of modern logistics technology" and its implementation. The gap has been narrowed compared with the aforementioned one at "emergency shelter arrangements", "effective logistics management", "existing of emergency evacuation requirements", "determination of the locations of emergency evacuation requirements", and "timely and accurate relief needs assessment" factors. However, the small gap has been revealed for the "inventories of emergency resources" and "determination of the locations of emergency resources" factors. Few of the respondents had no opinion about the implementation of "timely and accurate relief needs assessment", "the security of relief aid during distribution and transportation", "application of modern logistics technology", and "the ability to inventory and unify the resources available" factors. This few number of 'no opinion' answers is due to non-occurrence of these factors within their direct duties at the directorate, but within external committees which formed with relevant organisations.

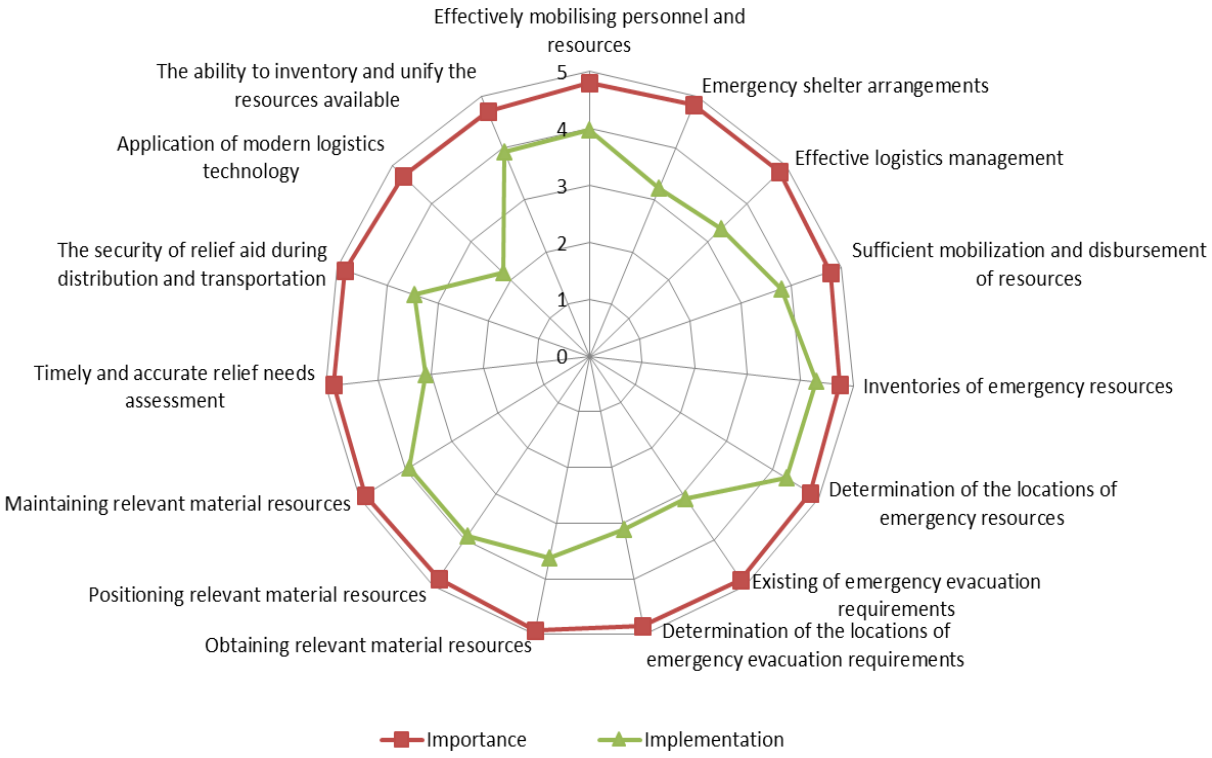


Figure 4.35 Comparison of the Importance of Providing the Right Relief Supplies Factors against their Implementation at the Directing Stage

4.8.3.4 Analysis of the Importance of Speed of Response Factors against their Implementation

Regarding the factors of speed of response, which is demonstrated in Figure 4.36 below, the factors "very short response time to start the emergency plan", "the clarity of tasks and responsibilities", and "evacuation" have the smallest gap compared with the other factors. On the other hand, the factor that has the largest gap is "the effectiveness of the financial incentives provided". The rest of the factors are quite similar to each other and also have a large gap.

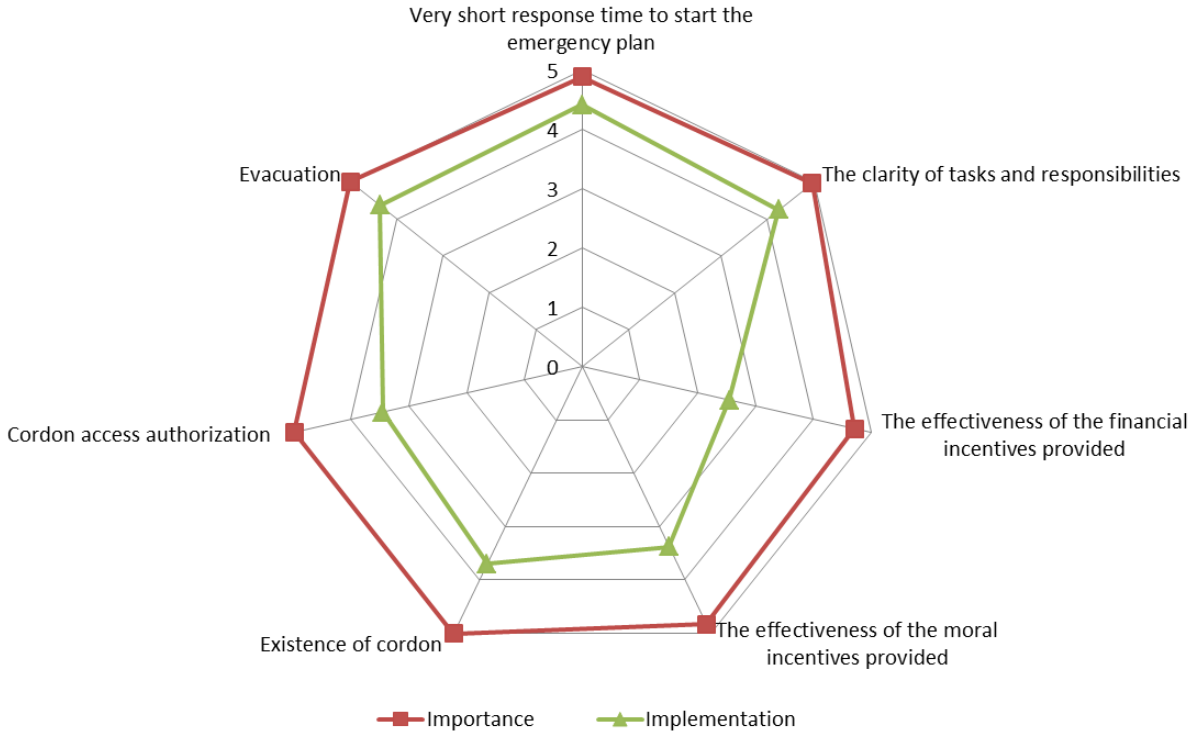


Figure 4.36 Comparison of the Importance of Speed of Response Factors against their Implementation at the Directing Stage

4.8.4 Implementation of Disaster Response Management Factors at the Controlling Stage

4.8.4.1 Analysis of the Importance of Evaluations Factors against their Implementation

According to Figure 4.37, three small gaps have appeared at the "conducting risk assessments", "statistics and feedback of loss information" and "evaluation of the efficiency and effectiveness of the management system" factors. Though the gap has disappeared with the "effective damage reporting system" factor, the rest of the factors are quite similar to each other and have a large gap.

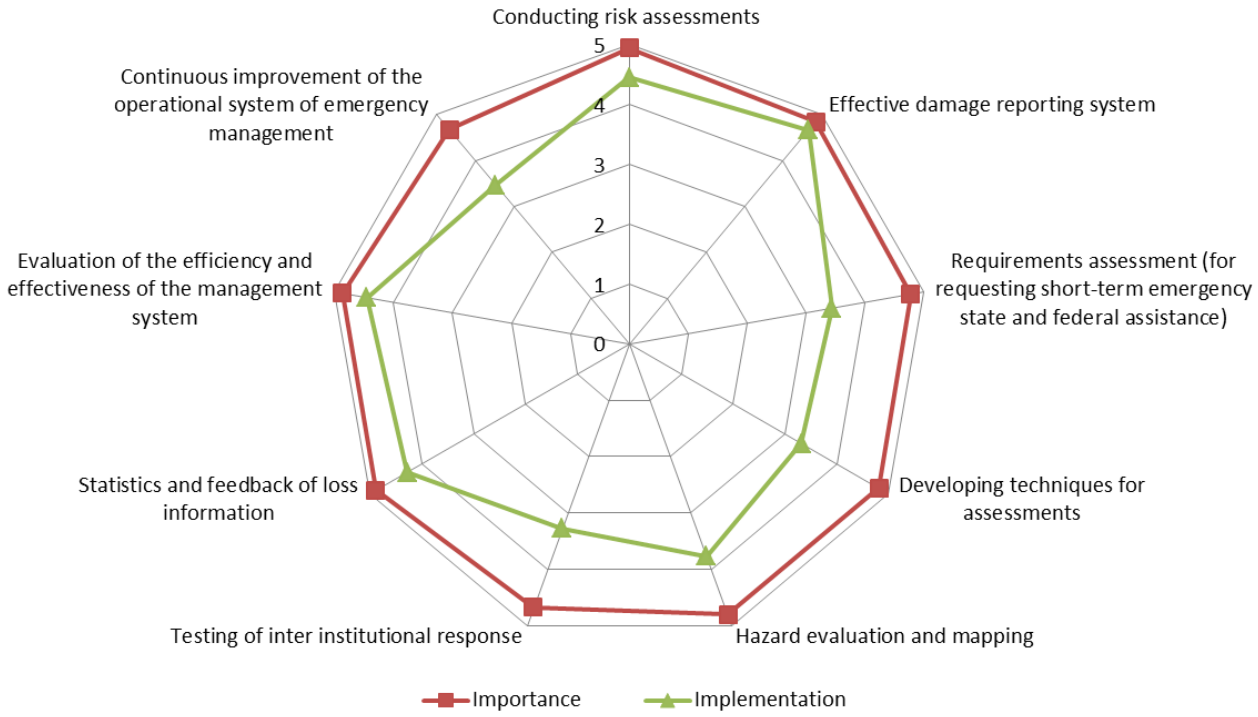


Figure 4.37 Comparison of the Importance of Evaluations Factors against their Implementation at the Controlling Stage

4.9 Summary of the Questionnaire Survey Analysis

Having compared the importance and implementation for good practice disaster response management factors through its four stages (Planning, Organising, Directing, and Controlling), a gap analysis was conducted to present the gaps between levels of importance and implementation of these factors. Such gaps were further confirmed the limited implementation of several elements of good practice disaster response management. The next section will discuss the documents related to the current administrative system of disaster response management and other organisations that are related to disaster response in Iraq.

4.10 Document Analysis

In order to increase the reliability and validity of the data that was obtained from interviewees' responses and the questionnaire survey conducted at the Iraqi General Directorate of Civil Defence (IGDCD), the researcher sought to find more documents from this directorate related to the current administrative system of disaster response management and other organisations that are related to disaster response in Iraq. The unpublished internal statistic, studies and reports, and different laws will be discussed in the following sections. Before proceeding to examine these documents and analysing them, it will be necessary to present them in Table 4.1 as follows:

Table 4.1 Documents Details

No.	Name	Type	Source
1	Number of Killed in General Directorate of Civil Defence in Baghdad and the provinces while responding to disaster 2003–2015	Internal Statistic	IGDCD
2	Staff Shortage	Internal Statistic	IGDCD
3	Number of unfit to work (medically classified) as (a, b, c, does not fit) by Directorate	Internal Statistic	IGDCD
4	Number of unfit to work (medically classified) by Medical Classifications (a, b, c, does not fit)	Internal Statistic	IGDCD
5	The law of service and retirement of the Internal Security Forces No. 18 of 2011	Law	IGDCD
6	The number and status of the fire nozzles in the province of Baghdad in 2014	Internal Statistic	IGDCD
7	The current, required number of civil defence centre per 100,000 people in the province of Baghdad	Internal Statistic	IGDCD
8	The study of civil defence centres within the limits of the Municipality of Baghdad	Study	IGDCD
9	Draft of national strategy for disaster management in Iraq	Study	IGDCD
10	Hyogo Framework for Action 2005 – 2015 (HFA)	Follow-up (HFA)	IGDCD

	Building the resilience of nations and communities to disasters UNISDR Follow-up to Iraqi General Directorate of Civil Defence	2005 – 2015	
11	Arab Strategy for Disaster Risk Reduction 2020	Study	IGDCD
12	Civil Defence Act No. 44 of 2013	Law	IGDCD
13	Civil Service Act No. 24 of 1960 amended	Law	IGDCD

4.10.1 Number of Killed in the General Directorate of Civil Defence in Baghdad and the Provinces

Statistics in Section 2.12.3 have shown that many Iraqi people have been affected by terrorist operations. In this section, statistics about the number of killed will be discussed in order to show one of the challenges facing the employees in the Iraqi General Directorate of Civil Defence in Baghdad and the provinces, while responding to disasters.

While responding to the terrorist events, a lot of employees (disaster responders) from the General Directorate of Civil Defence in Baghdad and all Iraqi provinces were killed. This unsafe situation is considered a major challenge to all the employees in these directorates. It can be seen clearly from Figure 4.38 that more than 60 employees were killed during 2006 and 2007. This number decreased dramatically in the following year. In 2011 and 2014 the number increased slightly to 26.

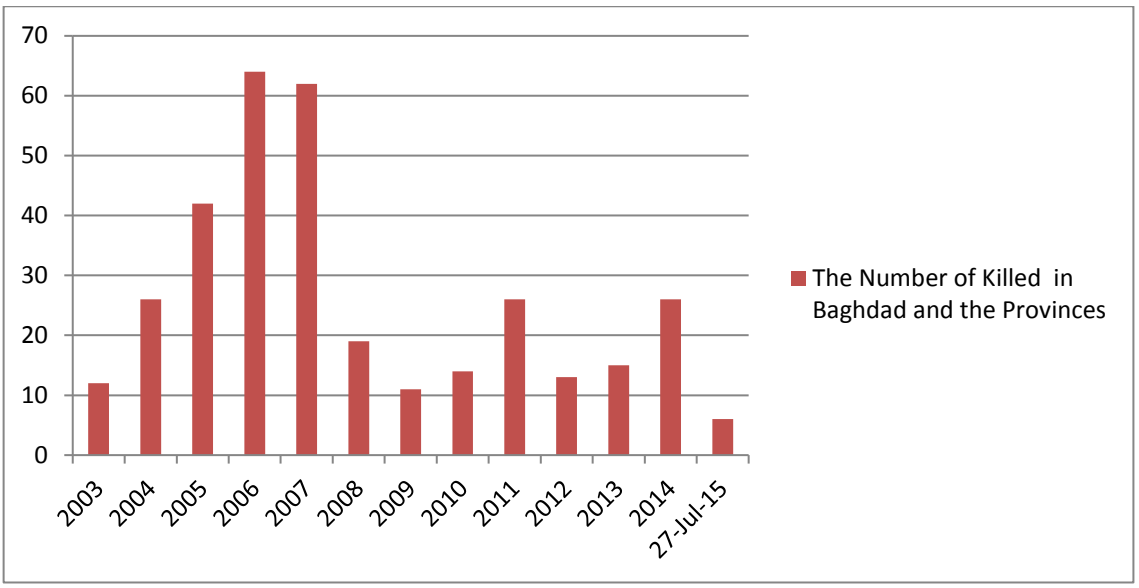


Figure 4.38 Number of Killed in the General Directorate of Civil Defence in Baghdad and the Provinces, while Responding to Disaster 2003–2015 (General Directorate of Civil Defence, 2016)

4.10.2 Staff Shortage

Figure 4.39 below illustrates the percentage of staff shortages, as defined from the optimal number to the actual number employed, in the directorates of civil defence in Baghdad and the Iraqi provinces. Figure 4.39 clearly shows the significant shortage in most of the Iraqi provinces, which has been due to the employment opportunities not being offered to all during the last five years. When these doors originally opened in 2003, the majority of people who wished to work in these areas could not apply for these jobs because of the poor security situation, especially in the Sunni triangle provinces in Iraq. The statistics in Figure 4.39 support this view through the noticeable higher shortages in these provinces: more than 50% in Al-Anbar, Kirkuk, Salah AL-Dien, Diyala, and Ninawa, whereas the shortages are 17.5% in Baghdad Al-Rusafa, and Maysan and Thi Qar had a similar shortage of 20.7%. To sum up, the Iraqi General Directorate of Civil Defence, in general, is suffering from staff shortages of almost 40% which is considered one of the marked weakness points in this directorate.

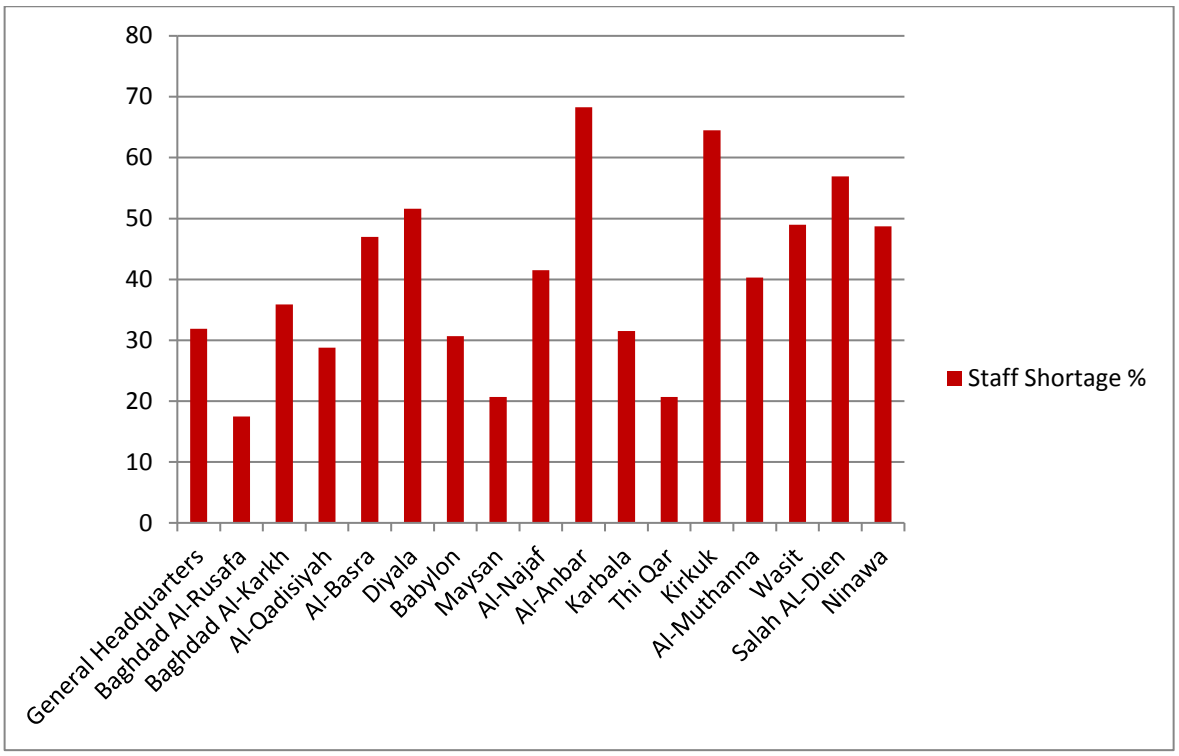


Figure 4.39 Percentage of Staff Shortage in the Directorates of Civil Defence in Baghdad and the Iraqi Provinces (General Directorate of Civil Defence, 2016)

4.10.3 Unfit to Work (Medically Classified)

In terms of health and fitness, the regulation of the physical fitness of the Internal Security Forces No. 31 of 1980, that is located under the law of service and retirement of the Internal Security Forces No. 18 for the year 2011, categorised the staff into three classes as illustrated in the law section below:

Article3: *Policemen are classified into three categories in terms of health and fitness:(Iraqi Government, 2011, p. 214)*

First (I): First class includes:

a) *Policemen in continuous service that requires special effort and especially physical ability, which includes commandos, divers, and any others that require these qualities.*
b) *Policemen in continuous service in the other departments within the internal security forces.*

Second (II): Second class includes:

a) *Technical policemen who actually practised their trade or profession or jurisdiction in the internal security forces.*

b) *Policemen in the other departments that do not require a high physical and psychological efforts, such as those in administrative and clerical work and similar work.*

c) *Policemen in continuous service, where the special Military Medical Committee have deemed them, at some point during their service, unfit to take up arms but able to do other jobs.*

Third (III): Third class includes: *Policemen who are not fit to continue in service in the Internal Security Forces.*

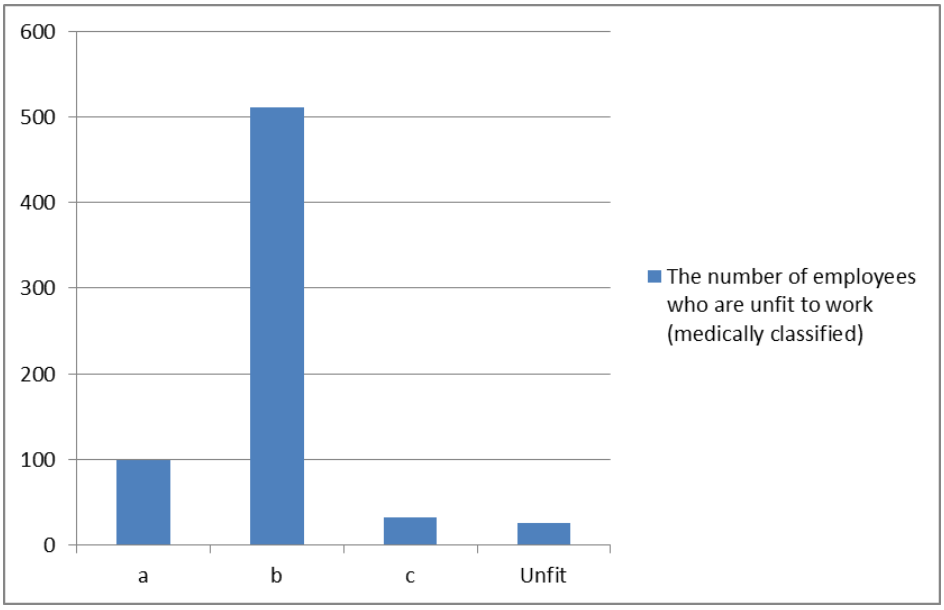


Figure 4.40 Number of Unfit to Work (Medically Classified) Classifications (a, b, c, unfit)

According to the statistics in Figure 4.40, the problem of employees of the General Directorate of Civil Defence who are unfit to work (medically classified), is concentrated in class b/ II of Article (3), with staff whose work does not require much physical and psychological effort. There were 511 employees who could not respond to any event. They could only do administrative and clerical work. Consequently, this adds a burden on the current administrative system of disaster response management in Iraq.

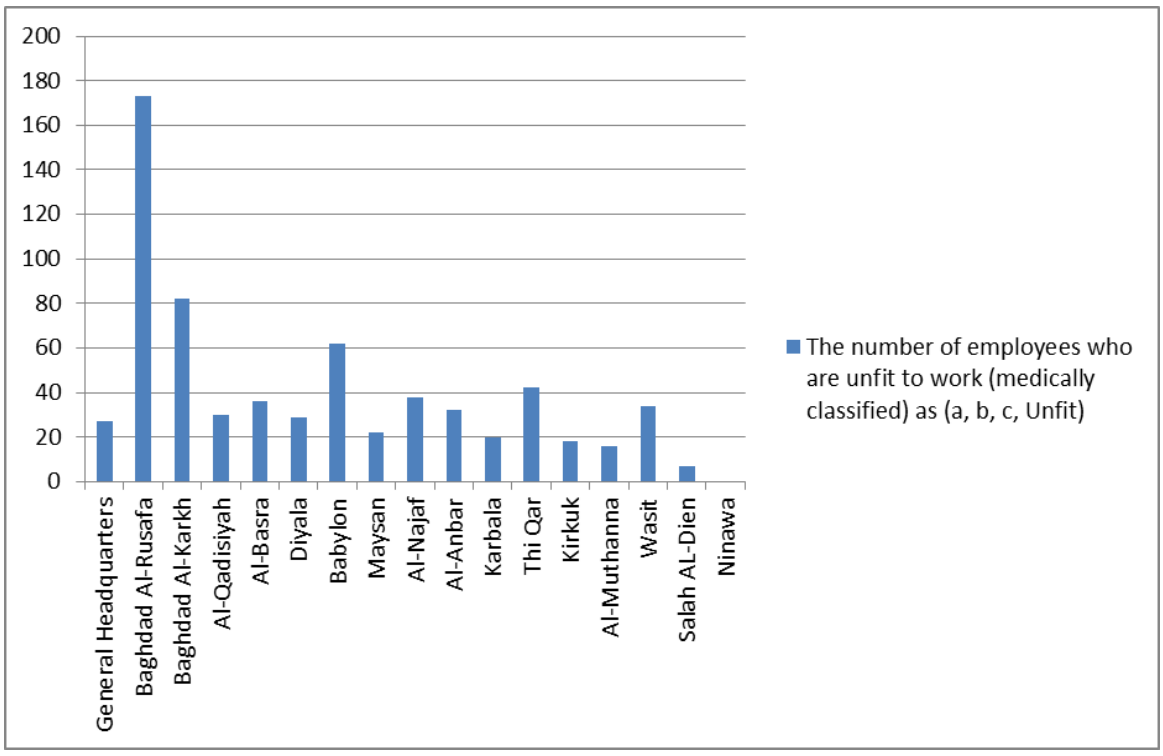


Figure 4.41 Number of Unfit to Work (Medically Classified) as (a, b, c, unfit) by Directorate

As mentioned before, the problem of employees of the General Directorate of Civil defence who are unfit to work (medically classified) is considered a critical problem facing the current administrative system of disaster response management in Iraq. Due to the statistics obtained from the Iraqi General Directorate of Civil Defence, there are a large number of employees who are categorised as unfit to work (medically classified) distributed throughout the directorates of Baghdad and all Iraqi cities except in the region of Kurdistan. According to Figure 4.41, the Baghdad (Al-Rusafa) directorate had the largest number of employees who were unfit for work (medically classified) (173). Moreover, the Baghdad (Al-Karkh) and Babylon directorates took the second and third places with 82 and 62 respectively. However, the Salah AL-Dien directorate had the smallest number of them (7).

4.10.4 Projects Classification

In order to keep pace with urban growth in the country, for the distribution of civil defence service centres, there needs to be knowledge of a range of influencing variables on the level of their performance efficiencies, such as the distribution of population density, facilities, and service buildings. Thus, buildings and projects are classified into three categories, depending

on the nature of their activities, importance, and the degree of severity of its danger for people. Each civil defence centre serves a number of residential places as well as classified projects, as follows: (Urban Planning Department, 2014)

Class A: Projects and vital installations, which include electric power plants, large factories, storage units, granaries, airports, ports, and the headquarters of the ministries (vital installations).

Class B: This category includes service departments such as municipalities and communications.

Class C: This category includes shops, pharmacies as well as housing.

4.10.5 The Required Number of Civil Defence Centres in the Province of Baghdad

In order to study the real situation of the civil defence centres and their distribution, then measuring their efficiency, the study of population growth and its distribution is required. According to Urban Planning Department (2014), the estimated population of 2010 is adopted to calculate the deficit, current and required number of civil defence centres per 100,000 people in the Baghdad Governorate.

Table 4.2 The Current and Required Number of Civil Defence Centres per 100,000 People in the Province of Baghdad (Urban Planning Department, 2014)

Civil defence centre building			Population according to estimates of the population in 2010
The current number	The required number per 100,000 people	Deficit	
27	63	37	6,335,353

It can be seen from Table 4.2 that 63 civil defence centre buildings will be required in the future if we adopt a building for every 100,000 people. Consequently, the deficit totalled 37 buildings. Of the current civil defence centres, there are 11 that need to be rebuilt. Moreover, some civil defence centres only have a small built-up area, ranging from 250-1000 m^2, and 4 of them need to be expanded. Moreover, because the civil defence centre sites were chosen randomly, most

of them are located in the province of Baghdad and on roads where the speed limit drops to 30 km / h, which reduces the speed and access of civil defence vehicles to the scene and causes many losses. However, only 10 buildings are located on the main roads, which is equivalent to approximately 37% of the current number (27). Further, there are areas on the outskirts of the Baghdad Municipality which have no civil defence centres.

4.10.6 The Status of the Fire Nozzles in the Province of Baghdad

It is widely acknowledged that fire nozzles are considered an important part of equipment for firefighting and a major weapon against fire. As the purpose of the installation of fire extinguishing nozzles is to provide a steady source of water to extinguish the fire, they are connected to the public water network. These nozzles are placed in clearly visible sites that are easily accessible by the civil defence teams in the case of emergency. Such nozzles serve all buildings and constructions in various districts of the city and it should be checked and maintained periodically to ensure its safety and effectiveness when required. Thus the status of the fire nozzles in Baghdad Governorate has been discussed in this study in order to evaluate the current situation for these services, in addition to civil defence centre services.

Table 4.3 The Number and Status of the Fire Nozzles in the Province of Baghdad in 2014 (Urban Planning Department, 2014)

Number of valid fire nozzles	Number of faulty fire nozzles	Total	Number of Proposed fire nozzles
947	603	1550	242

As can be seen from Table 4.3, the total number of fire nozzles in the province of Baghdad is about 1550 nozzles and the working ones number 947 while there are 603 faulty nozzles. This situation requires increasing the number of fire nozzles and repairing the faulty ones in the province of Baghdad.

4.10.7 Summary of Document Analysis

Different documents have been reviewed related to the current administrative system of disaster response management and response practices within the Iraqi General Directorate of Civil

Defence (IGDCD), and other organisations that are related to disaster response in Iraq. To increase the reliability and validity of the data that was obtained from interviewees' responses and the questionnaire survey conducted at this directorate, unpublished internal statistic, reports and studies, and different laws were analysed and discussed in this section. The section that follows will provide a summary of this chapter.

4.11 Chapter Summary

This chapter has reviewed the data analysis by using three key techniques, namely; interviews, questionnaire survey, and document analysis. Before presenting the discussion of each technique, case study back round was provided to have a general idea about the General Directorate of Civil Defence. The analysis of interview responses has started by categorising each stage as being either a weakness, strength, or recommendation for disaster response management. Subsequently, sub-themes were extracted from the collected data on each main theme. After that, implementation of good practice disaster response management factors was checked by conducting questionnaire survey. The gaps between levels of importance and implementation were presented which further confirms the limited implementation of several elements of good practice disaster response management. The final section in this chapter has examined and analysed different kinds of documents, such as unpublished internal statistic, reports and studies, and different laws related to the current administrative system of disaster response management and response practices within the Iraqi General Directorate of Civil Defence (IGDCD). To sum up, to increase the reliability and validity of the data, the research was triangulated its data by using different techniques to make this study more robust. The findings relating to the disaster response management will be provided in the next chapter.

CHAPTER 5 RESEARCH FINDINGS

5.1 Introduction

Chapter 4 presented the data analysis of the single case study through using a triangulation method between the disaster response expert interviews, questionnaire survey, and document analysis. This chapter discusses the findings, which emerged from the analysis of the three methods presented in the previous chapter, the primary data, with the data obtained from previous scholars, the secondary data. Therefore, the discussion takes a cross analysis approach to discuss weaknesses, strengths, and recommendations within the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling). Accordingly, this chapter is divided into three main sections, each of which presents the results relating to the main themes: weaknesses, strengths, and recommendations for disaster response management. An important finding is that some strengths were also discussed as being weaknesses, that is, the themes appeared in both sections. The organisation of the structure of the findings is similar to the interview themes and sub-themes discussed in Chapter 4 since the majority of the themes are extracted from the interview data.

5.2 Weaknesses during Disaster Response Management

This section analyses the weaknesses during disaster response management across the four stages of management as shown in Table 5.1. The research study findings in these four stages will be presented in this section by comparing the expert interview findings with the gaps of implementation for Disaster Response Management factors, document analysis findings, and findings from the literature review. The themes below move on to describe in greater detail the weaknesses during disaster response management.

Table 5.1 Weaknesses during Disaster Response Management Stages

Stage / Weaknesses	Planning stage	Organising stage	Directing stage	Controlling stage
Coordination between Organisations and Commanding the Scene	X	X	X	X
Endowment of Equipment, Tools and Infrastructure	X	X	X	X
Citizens' Irresponsible Intervention	X		X	
Education on Disaster Risk	X			X

Traffic Jams and Closing the Roads by the Security Checkpoints and Concrete Barriers	X		X	
The Security Situation	X		X	
Unplanned Random Development	X		X	
Lack of Staff	X	X		
Individual Mistakes and Mistake in Decision Making			X	X
Misuse of Machines, Equipment and Material			X	X
Security cordon			X	X
Financial Resources	X			
Planning Process	X			
Supporting Ordinances	X			
Coordination within the Organisation		X		
Correspondence Delays and Red Tape		X		
Nepotism and Cronyism		X		
Employees' Rights		X		
Hierarchy and Centralization Problems		X		
Staff Movement and Reduction of Sections		X		
Communication and Information			X	
Frequent Blackouts for the National Electricity			X	
Morale and Financial Incentives			X	
Providing the Right Relief Supplies for People in Need at the Right Time			X	
Speed of response			X	
Risk Assessments				X

5.2.1 Coordination between Organisations and Commanding the Scene

To avoid confusion and to facilitate an effective response, skilful coordination among the wide range of possible stakeholders that might provide assistance during a disaster, such as utility companies, the military, private sector entities, and NGOs, is critical (UNISDR & UNOCHA, 2008). The magnitude or the complexity of the needs associated with disaster response cannot be addressed without coordination, particularly, coordination between organisations. As inter-organisational collaboration remains one of the main challenges (Comfort & Kapucu, 2006), this point appears in all four stages of Disaster Response Management in Iraq. According to the interview analysis in Sections 4.3.1.2, 4.4.1.1, 4.5.1.3, and 4.6.1.4, more than 80% of the interviewees referred to coordination between organisations as a major challenge facing the disaster response process. Meanwhile, the answers given to the questionnaires, which are analysed in Section 4.8.2.1 and Section 4.8.3.1, pinpoint four important failures in the

implementation of a "coordination between organisations", "government unity of leadership to coordinate as a whole", "the involvement and support of the army", and "non-EOC organisations being mobilised for emergency response". Consequently, the gaps that there are between these three important factors and their implementation might support the interviewees' opinions. Further, documents analysis in Appendix I-Section I.2.2 also upholds this challenge. Committee 101 (2010), in its points of weakness, mentions that there is a "weakness of the mechanisms of coordination between the federal ministries and local governments on the subject of disaster". Similar to the findings of the primary data, the literature which has been reviewed thus far, such as (Banipal, 2006; Baris, 2009; Bharosa et al., 2010; Chen, Sharman, Rao, et al., 2008; Greiving et al., 2012; International Risk Governance Council, 2009; Majchrzak, Jarvenpaa, & Hollingshead, 2007; Meissner et al., 2002; Saeed, 2012; Terawi, 2008; Unlu et al., 2010) tend to support the interviews' opinions of the difficulty in coordination between different organisations due to intersections and overlaps that occur in responsibilities of such organisations.

Based on interviewees' opinion, cooperation from the rest of the organisation according to the plan was lacked. This view was upheld by questionnaire's responders. Figure 4.26 is showed a gap in implementing "drawing up organisational disaster plans and integrating them with overall community-mass-emergency plans" factor. It seems to be due to failure in implementing "government unity of leadership to plan as a whole" factors. Such failure might lead to other problems such as overlapping in responsibilities with other organisations and intersections between the executive authorities. Committee 101 (2010) upheld this view, stating that, on the subject of disaster, there was a weakness of the mechanisms of coordination between the federal ministries and local governments. Similarly, Planning Department (2015) attributes this failure to the limited attention that has been given by organisations and institutions in terms of preparing disaster response plan. Moreover, conflicting mandates and overlapping jurisdictions due to multiple institutions might lead to a fragmented response capacity. Further, there is no coordinating body or focal agency to ensure an integrated response by the multiple agencies working on Disaster Risk Reduction in Iraq (Humayun & Al-Abyadh, 2014). Quite similar problem has appeared in Taiwan, according to Chen et al. (2006), the coordination mechanism did not develop well between the central government and local governments. Further, LeClerc (2015) stressed that response will not be successful if the communication and organisation structures set up prior to the disaster is not able to accommodate a variety of factors when coordinating response between multiple agencies. In the USA, only modest levels of interaction

across all jurisdictional levels within the network of actors identified for the Katrina response system (Comfort & Haase, 2006). These modest levels of interaction might happen due to not involving all jurisdictional levels and other agencies in the planning process which happens also in Taiwan. As a result, the Disaster Prevention and Response Operational Plans (DPROPs) become reports on bookshelves. A further result, many supporting agencies were not known their roles in the disaster management mechanism (Chen et al., 2006; Lindell & Perry, 2001; Lindell et al., 1996). Interviewees of this study also had the same point of view stating that, in Iraq, some organisations intervene without knowing what they are doing (refer Section 4.4.1.1). In the UK's emergency response, ideas concerning co-ordination in the disaster response are confused. Such confusion might partly because of co-ordination by planning is not clearly distinguished from co-ordination by feedback, in which performance misunderstandings or mistakes are adjusted by means of peer-group pressure (Hills, 1994).

Based on Chen, Sharman, Rao, et al. (2008) the coordination of emergency response is complicated by factors such as multi-authority and massive personal involvement; infrastructure interdependencies; the high demand for timely information; and conflict of interest. Uhr et al. (2008) support this view indicating that the complexity of the response operation was often due to the unclear distribution of authority in the disaster response. Such unclear distribution sometimes causes confusing. This view was also supported by interviewees' opinion stating that due to the intervention from other organisations, there is a difficulty in commanding the scene. Moreover, although working partnerships were crucial to the immediate response and subsequent recovery (Batho et al., 1999), this might led to limit the authority of command at the scene, based on interviewees' opinion. They further explained: presence more than leadership at the scene will increase the problems and causing the failure to obtain satisfactory results. In agreement, Comfort (2007) and Nolte and Boenigk (2013) found that most of the management problems that are highlighted by researchers and practitioners might be attributed to joint disaster management activities of public and non-profit organisations. Such joining was possibly lacked to information exchange, coordination, and trust. Comfort (2002) touch in this problem, stating that some organisations might not have linked them to a larger community-wide response process. Because of the variation of the size and type of organisations involved in response operations, the disparity in knowledge, skills, access to information, and equipment widens among the participants in the response process.

5.2.2 Endowment of Equipment, Tools and Infrastructure

Responses to disastrous events rely on the assets and manpower of the central and provincial government and with support from non-governmental agencies and international donors (Goodyear, 2009). According to Perry and Lindell (2003), in order to meet the disaster demands, resources (personnel, facilities, equipment and materials) are needed by emergency response organisations. Therefore, identifying the demands that a disaster would impose upon those organisations should be required by the planning process. The findings of the primary data showed that, in the context of Iraq, a large gap is present regarding the "endowment of equipment, tools and infrastructure" factor in Figure 4.26 and consequently affects all four stages of disaster response management. This point was also supported by most of the interviewees; many suffer from the **shortage of heavy rescue equipment**. They attributed that to the late arrival of the supporting rescue mechanics from relevant organisations. The secondary data upheld this view; according to Goodyear (2009), to plan for mitigate and respond to future disasters in Iraq, stronger technical and infrastructural capabilities are imperative within the Government of Iraq and other disaster risk reduction stakeholders. This is due to limited access to professional equipment and training by civil services institutions which greatly contribute to weakening disaster management systems. Humayun and Al-Abyadh (2014) also support this view stating that scientific equipment and human resources that are used to assess and monitor risk are lacked in Iraqi government departments, those are responsible for undertaking risk assessments and monitoring. Further, Larson et al. (2006) upheld this point, stating that local first-responder resources are often overwhelmed by large-scale emergency incidents, such as acts of terrorism, human-caused accidents, and acts of nature.

Regarding the **civil defence infrastructure**, interviewees also shed light on the scarcity of civil defence infrastructure. Document analysis also supported this point and this was thoroughly discussed in Section (4.10.5). In addition to the issues relating to the scarcity of infrastructure, according to Robert and Lajtha (2002), the design and functionality of the Crisis Command Centre (CCC) can have an important effect on the behaviour and continuing motivation of the Crisis Management Team member during a disaster.

Despite the **existence of a fire nozzle network**, the majority of the interviewees affirm the scarcity of the network, especially in commercial areas, which can lead to an inefficient response. In agreement, document analysis in Section 4.10.6 illustrated that only 947 from the total number of fire nozzles in the province of Baghdad (1550) are in working order and the

rest are faulty, despite the fact that one participant claimed that there is some coordination with the water organisation regarding the installation, maintenance, and repair of the fire nozzles network. In fact, water organisation installed new networks, but sometimes these do not work properly due to weak water pressure or unsuitability of the network for vehicles' water hoses, for example. Further, because of the outdated fire nozzle network maps, some of these nozzles are not visible – they are sometimes buried in the ground and there is a lack of awareness of them.

Apropos **misuse of machines, equipment and resources,** interviewees stressed the lack of regular maintenance for machines and personal equipment, as well as incorrect usage of devices and equipment; in addition, sometimes resources are not used in an appropriate manner by the responders when attending the scene.

5.2.3 Citizens' Irresponsible Intervention

Recent disasters have shown that it is difficult for policy makers to respond to citizens' reactions to disasters (Pennings & Grossman, 2008). In Iraq, the culture of the community is such that they tend to help people during difficulties. However, the lack of knowledge and understanding of the people who try to help the disaster responders make it a very difficult situation, and thus this factor appears in two stages: the planning and the directing stages. This affects proper implementation of the plans (that have been previously prepared) during the disaster response due to the difficulty of containing the chaos during the incident. According to the interview analysis in Section (4.3.1.1), about 50% of the interviewees referred to the **lack of Society's awareness** as a major reason for citizens' intervention. Meanwhile, questionnaire respondents, in their answers, which are analysed in Section (4.8.1.4), pinpoint two important failures in implementation: the "community capabilities audit", and the "community preparedness and training" factors. Insufficient public training with little review as to what they learn may have a huge impact on their level of awareness, and, in turn, this affects their behaviour during disaster events. Moreover, two documents within documents analysis in Section (I.2.2) and (I.2.3) also upheld this challenge. Firstly, Committee 101 (2010) in its weakness points mention that there is a *"lack of community awareness of disaster response and risk reduction"*. Secondly, the Planning Department (2015) assert that there are challenges in *"the weakness of community awareness"*. In agreement, within the literature review, Schneider (1992) considered the unpredictably of the public's response to any specific disaster as being a problem. Moreover, Helbing et al. (2006) stress that it is hard to coordinate many people and different organisations that have not collaborated before and do not know each other's command

structures. Similarly, it was found that in France, there was a frequent complaint from Crisis Management Team (CMT) members about the explosion of irrational attitudes and behaviours of citizens, the media and even politicians. If they had a sounder grasp of the symbolic or even sacred aspects underlying many crisis situations and had received appropriate training, they might respond differently, or at least with greater understanding (Robert & Lajtha, 2002). Likewise, in Turkey, Baris (2009), points out that poor awareness and lack of action of population and institutions resulted in the lack of knowledge of modern disaster risk factors. According to Patterson, Weil, and Patel (2010), the weaknesses and strengths of the community should be taken into account because not every community is equal and not all communities are helpful. Communities might play a role that is harmful to their members or to society overall. For instance, "community cohesion in disaster response may encourage members to remain in vulnerable locations because they have a false sense of security or desire to maintain community solidarity. Certain shared practices, beliefs, etc, may lead communities & their members to act in ways that make them more vulnerable". On the contrary, in western societies, citizens often act rationally in disaster situations as they do in everyday life to save most of the victims by providing the initial aid or materials to help (Helsloot & Ruitenberg, 2004). In agreement, Patterson et al. (2010) added that cooperative behaviour and teamwork that government lacks can be urged by well-functioning public organisations that have the trust of their members. They further have strong abilities to assess needs and allocate services and goods equitably and efficiently. Accordingly, including communities in disaster response and making meaningful partnerships between publics and government agencies is important.

On the other hand, some interviewees attributed citizens' intervention to the security breach and to the failure in imposing a security cordon properly (refer Section 4.3.1.1 and Section 4.5.1.1). Similarly, in the UK, cordon access was a problem on the day of the blast of Manchester city centre's bombing in 1996, and afterwards, since some people disregarded the cordon. A few people were still in the area nearby to the bomb when it exploded, and some of these were severely injured, even police toured the area in vehicles and used a helicopter to inform people to evacuate the city centre. However, the appropriate authority resolved this situation by imposing strict controls for those who wanted to enter (Batho et al., 1999). Moreover, based on interviewees' opinion, due to the poor security situation in Iraq, additional problems might happen through such irresponsible intervention or citizens gathering around the scene. As this behaviour can be exploited by suicide bombers, the number of losses for such an incident will potentially increase. At the same time, this behaviour might hinder the responders in their work.

5.2.4 Education on Disaster Risk

Disaster education is now accepted as an essential component in formulating the proper disaster risk reduction strategies for any country. An opportunity to reduce the risks and vulnerabilities risks of various social groups can be obtained by adapting proper application of technical and scientific knowledge on disasters (Shaw, Mallick, & Takeuchi, 2011). According to the primary data findings, this theme appears in two stages of the disaster response management cycle: the planning and the controlling stages. According to interviewees' point of view, because the material of civil defence is not covered in the curriculum as in the past, **public education** is considered one of the common challenges during the planning stage. Consequently, this challenge might cause problems for the planners and the responders, in that the public remain uneducated as to the best way to respond. Questionnaire respondents partially agree with this aforementioned view, although their answers about factors "undertaking public educational activities", "involvement, education and review" have a smaller gap (between importance and implementation) compared with the other factors. This may be because of the public educational activities only being limited to employees in particular organisations and students in secondary schools and higher education, so the questionnaire respondents partially agreed with the interviewees. Committee 101 (2010) within document analysis supported this challenge stating that there is a "weakness in capabilities at all levels particularly in local communities". This point was also supported by Planning Department (2015) who sees this from the operative point of view "non-inclusion of all society segments in capacity building". Similarly in secondary data, in Turkey, one of many problems in organising a proper disaster management and response system are the absence of an organised educational program for the general public (Baris, 2009). Whilst in the Caribbean, training materials, in most cases, were focused on prevention and response to the hazardous event with little or no focus on vulnerability (Ferdinand et al., 2012).

In the case of **staff education**, several interviewees had suffered due to the lack of internal and external courses and practices, particularly those specialised courses in the field of planning are very rare as well as exercising the national plan to respond to the disaster. These weaknesses are upheld from questionnaire's responders in Section (4.8.1.4.). It can be seen in Figure 4.29 that most of the factors have a large gap indicating that the staff have insufficient training and knowledge in different aspects, such as disaster drills, simulations, updating and testing of the inter-institutional response. However, according to Committee 101 (2010), lack of training on contingency plans in a large number of important facilities are one of the problems which are

raised in document analysis. Moreover, the majority of Iraqi provinces shown in Table I.1 required an urgent need for more training and development, more technical knowledge and skills of planning, and exercise for better preparedness and response (Committee 101, 2010, pp. 7-8). Similarly, Planning Department (2015) have the same point of view and supports these weaknesses by stating *"the need for human and material capacity building"*. In agreement, Goodyear (2009) limited training greatly contributed to weakening disaster management systems in Iraq. May et al. (2015) support these views stating that in the preparation for major incidents, insufficient staff training has been identified as a problem because education and training have been accepted as cornerstones of an effective disaster response. Moreover, conceptual gaps have emerged from disaster situations that happened over the last decade related to teaching staff, including senior managers, how to identify and make effective decisions under conditions of stress and in the absence of sufficient time, resources, and information? Further, due to the rapid change in the landscape of disaster management in both qualitative and quantitative terms, traditional disaster management training methods are proving to be inadequate and ineffective. Consequently, a new approach to disaster management is required (Robert & Lajtha, 2002).

In terms of **disasters drills**, interviewees and questionnaire's respondents have a similar point of view that appears in the large gap for the factor "disaster drills, rehearsals and simulations". This point acquired a good support from Desforges and Waeckerle (1991) stated that unfortunately, community drills may occur rarely, may not check the plan and the participants effectively, and may create a misplaced sense of security. In agreement, Madry (2015) stressed that standardised training is important and it is a vital component in the use of any equipment or technology. However other interviewees raise an important challenge *"weakness of schematic awareness and experience of associate members and leaders".*Perry and Lindell (2003) agree with this view, stating that a general lack of awareness on planning for natural and technological disasters on the part of law-enforcement officials, elected officials, and policy actors who direct much of the terrorism plan construction. Further, Desforges and Waeckerle (1991) stress on experience, because it is a key element in the success of a response.

Putting many barriers in front of ambitious staff to complete their studies or attending courses outside the country is considered one of the major problems that are appeared in interviewees' responses. This view was also supported by questionnaire respondents in their answer about "developing techniques for knowledge transfer" and how the gap is large. Further, based on interviewees' opinion, the **lack of citizens' awareness with respect to the Civil Defence** is

also another problem facing planning process. According to questionnaire respondents' answers shown in Figure 4.29, although the gap of "undertaking public educational activities" factor was small, the gap of "community capabilities audit" factor was much larger than the latter one. This might give a good reason for this lack. Moreover, despite school students, employees in organisations and projects have training on the acts of the civil defence (Planning Department, 2015), such training did not cover all society segment. Further, Due to Emergency Management Australia (2004) opinion, if response plans and programs are well prepared, the community's ability can cope with the impact of emergencies.

5.2.5 Difficulties in Reaching the Disaster Scene

It is widely acknowledged that one of the main problems facing teams of disaster responders in Iraq, and particularly in Baghdad, is traffic jams. This was highlighted in two of the four stages of disaster response management (planning and directing). The reasons behind this problem are certainly having too many vehicles in spite of there being few efficient roads. Moreover, the limited number of public transportation compared to private ones adds to the problem. According to interviewees' opinion, undoubtedly, the **defect in urban planning, road maintenance**, and **security blocks** are considered the major causes of traffic jams in Iraq. Moreover, the multitude of concrete barriers and security checkpoints can impede the fire engines and the responder teams to reach the scene smoothly and quickly. The interviewees are also of the opinion that the **lack of coordination with services and security agencies** is a vital factor causing this problem. This view was also supported by the questionnaire data in Section (4.8.2.1).

5.2.6 Security Situation

According to interviewee opinion, because of a **security breach** due to the **lack of effective checking devices**, **dual or sequential bombings** were increased significantly. Such increase leads to a dramatic rise in casualties between responders' team as illustrated in Figure 4.38 within document analysis, and the rest of the people as showed in Figure 2.17 in Section (2.12.3). Moreover, based on interviewees' opinion due to the absence of **security sense** and the lack of **seriousness of the local police in exclusion the citizens from risk sites**, there is a lack of **knowledge about the explosion implementers and the time and place of the explosion**. This absence of security sense and knowledge can cause many losses. Planning Department (2015) agree with the aforementioned view, stating that the weakness of the security and political stability is a major challenge facing Iraqi General Directorate of Civil Defence. Similarly, Committee 101 (2010) supported this view, arguing that terrorism and

security risks are one of its challenges and it might lead to another challenge which is the presence of large numbers of displaced people and refugees may continue for some time to come. Such large numbers of displaced people and refugees overwhelmed the helping capacity of the government in general and the civil defence directorate in particular. Questionnaire's respondents agree with this important problem. This agreement is according to large gaps in implementing "human settlement relocation from disaster prone areas" and "prior planning of logistic centres" factors which appeared in Figure 4.26 indicating that the disaster responders' ability to help people after evacuation is limited.

5.2.7 Unplanned Random Development

One of the major problems that hinder the response process is the unplanned random development of roads, buildings, wiring, storage facilities and so on. Since 2003, there have been many unplanned random developments in Iraq. The primary data shows that the majority of the interviewees stressed the **poor urban planning** such as random housing, factories, and shops. Cavdur, Kose-Kucuk, and Sebatli (2016) support this view stating that the unwanted effects of disasters all around the world have been increased due to the increase in infrastructure complexities, populations, combined with the fast and unplanned urbanisation. Document analysis has also confirmed this point in Section (I.1). concluded that "overrun many of the popular markets on roads forbidden hard shoulders leads to closing the main streets completely and this is what affects the smooth flow of traffic and lack of access of civil defence teams to the accident place at the right time" and "the proliferation of street vendors (Ganabr and Albesttiyat), most of which are flammable, which caused the expansion of the fire and spread to other places". Consequently, based on interviewees' opinions, new challenge *"**lack of passable roads to reach the scene**"* has been generated as a result of the aforementioned problem. However, *"**random storage of materials**"* was also another challenge facing planning process. Moreover, the problem of **programmed cutting off for national electricity** has also a good space in interviews and document analysis. According to interviewees' opinion, although there is programmed cutting off for National Electricity, sometimes there is a deficit in electricity feeding reaches to 2 hours a day. To cover this deficit two other problems will be generated. Firstly, **illegal excesses on the national electricity grid**. Secondly, **random wiring for Simi-Generic Generator** has appeared. Urban Planning Department (2014) confirm these challenges, stating that connecting electric wires randomly, that leads to increase loads on the national electricity grid in addition to the formation of spider grid of electric wires, which were the cause of the fires get and spread, especially in the popular markets and reliance on private

generators that is not committed to the safety and security conditions. The scattering quantities of fuel and oils have been observed near these generators and not to be stored regularly and that was the cause of the fires get. This situation leads to the recurrence of fire accidents in popular markets and residential areas. From this argument, it is apparent that the obstructions and risks for responders' teams and fire engines are huge. In the USA and Canada, 50 million people were left without electricity for around 48 hours because of the largest blackout that probably ever occurred in 2003 in north-eastern areas of North America. Despite this relatively short period of time, the blackout caused chaos in many aspects of modern life, such as the water supply, traffic systems, petrol stations, radio and TV stations, and mobile phone networks. Consequently, this situation limited the ability to inform the public about the problems and there was a lack of communication generally (Helbing et al., 2006). Considering the situation in Iraq, in terms of the length of time without power, it is unsurprising that there are problems of communication and the efficient running of everyday life.

5.2.8 Lack of Staff

Adequate staffing is one of the general requirements of any organisation, and particularly disaster response organisations. Goodyear (2009) asserts that the assistance and manpower of the central and provincial government is a critical aspect when responding to catastrophic events. In agreement, Emanuele et al. (2009) stress the importance of replacing people, machinery and technologies so that, if one stops working for any reason, it can be rapidly substituted by another. According to the findings of primary data, twenty of the twenty-eight interviewees talked about the **lack of staff compared to the staffing of the official organisational structure, meaning that there are gaps in the structure and this can cause serious problems**. There are 40% fewer staff in reality, compared with the official staff requirement as described in the organisational structure of the general directorate of civil defence 2009, shown in Appendix J. Interviewees also discussed different reasons for this shortage, such as a lack of recruitment of new staff, delays in authorising the updated official organisational structure, ill-considered decisions, and the existence of the elderly and disabled employees who are unfit to work (as shown in Section 4.3.1.6). Interviewees further mentioned the consequences due to this shortage as explained in Section 4.4.1.7. The internal statistics showed in Section 4.10.3 within the document analysis also confirm these views. Another problem is that the General Directorate of Civil Defence are still referring to the old official organisational structure from 2009 (as shown in Appendix J), which whilst it has been updated several times, it is yet to be authorised for use from the key official in the Ministry of Interior,

due to correspondence delays and red tape. In agreement, Iraqi civil services institutions declared that their disaster response capacity is impeded by primary constraints such as fiscal resources and manpower (Goodyear, 2009). Humayun and Al-Abyadh (2014) also support this view stating that scientific equipment and human resources that are used to assess and monitor risk are lacked in Iraqi government departments, those are responsible for undertaking risk assessments and monitoring. The specific agency in Taiwan, Disaster Prevention and Response Committees (DPRCM), is further suffered from the same point. It does not have a full-time staff due to budget limitations in both central and local governments. Such limitation certainly lead to difficulty in hire additional staff (Chen et al., 2006).

According to interviewees' opinion, **lack of specialised staff** is an important problem facing planning process. Interviewees are in the opinion that civil engineering, organisation and statistics field needs more specialists. However, other interviewees prefer to mention again the medically classified problem, which has been discussed in section 4.10.3.

5.2.9 Individual Mistakes and Mistake in Decision Making

Decision-making can be seen as a problem-solving activity terminated by a solution considered to be satisfactory. Thus, it is a process of choice that can be rational or irrational and can be based on implicit or explicit assumptions (Platt, 2015). Because disaster demands critical decisions that must be made in difficult conditions (Platt, 2015), decision making is considered a critical component of any disaster response (Platt, 2015; Torma-Krajewski & Powers, 2010). Therefore, the success of that response is dependent upon effective decisions being made in a timely manner (Torma-Krajewski & Powers, 2010). This theme appeared in directing and controlling stages. According to interviewees' opinion, **failure in decision-making** might happen due to different reason, for example, individual mistakes, misplaced judgement, lack of flexibility, tasks overlapped, weakness in the training on commanding, controlling and decision-making, relying on staff with little experience, failing to secure the site before the intervention of civil defence teams, and false reporting or fictitious accidents.

Apropos **misplaced judgement**, interviewees in the opinion that individual mistakes and misplaced judgement might happen while responding to a disaster. In agreement, Desforges and Waeckerle (1991) stress that response to disasters might be plagued by different recurring problems such as errors in judgment. Desforges and Waeckerle (1991) added although experienced and knowledgeable leaders make sound decisions when faced with difficult or unexpected problems, mistakes in judgment, especially those committed early, will be

magnified quickly as the response proceeds. According to Federal Emergency Management Agency (2015), there are common reasons behind the failure of organisations in learning from and even repeat mistakes and errors, namely, failure of leadership, failure of communications, failure to plan, lack of ethics and resource conflicts. Goodyear (2009) support this view stating that decision- makers' inability to reconcile competing demands for resources may cause humanitarian disasters in Iraq. Further, although perceived risk by community or individual has been thought to be a major element of decision-making (Patterson et al., 2010), planners' inability to anticipate potential hazards and to appreciate their significance may also cause humanitarian disasters (Goodyear, 2009).

With respect to **tasks overlapping**, according to Uhr et al. (2008), a 'blurriness' appeared when responding to the flood situation in southern Sweden in 2004. Such vagueness might due to different ways of interpretation for various staff functions roles, partly as providing decision backing, partly as exercising a decision role, and partly as something in between. In Iraq also both interviewees and questionnaire's respondents agree with this view, as can clearly see the gap for implementing "the clarity of tasks and responsibilities" factor in Figure 4.36.

Regarding **training on commanding, controlling and decision-making**, based on interviewees' opinion, there is a weakness in this aspect. Such negative point might lead to relying on staff with little experience or sometimes causes failure in controlling the disaster site. Addressing negatives as well could be affected negatively through using the powers only to punish staff instead of using incentives to motivate them. These views were also supported by questionnaire's respondents in their answers about "properly exercising decision-making", and "competencies of managers and team members" factors and how the gaps are large in Figure 4.32. Robert and Lajtha (2002) confirm this view stating that conceptual gaps have been emerged from disaster situations that happened over the last decade related to teaching staff, including senior managers, how to identify and make effective decisions under conditions of stress and in the absence of sufficient time, resources, and information.

In terms of **improvisation in decision-making**, during response operation, improvisation in directing decisions and initiatives were taken by officers on the accident scene, in Sweden, without negotiation with other officials might cause diverge from existing plans (Uhr et al., 2008). Few interviewees confirm this view and criticised the negative point of improvising in decision-making and implementing the resolution without advice. This view was also supported by questionnaire respondents in their answers about "effective consultation with key stakeholders and target beneficiaries" and how the gap is large in Figure 4.32 indicating that

consultation with key stakeholders is limited. In spite of the above view, few interviewees stated that there was not enough flexibility in decision-making. Questionnaire's respondents have also upheld this view through the large gap in implementing "flexibility of decision making" factor which has been appeared in Figure 4.32.

With reference to **random and imprecise information**, this is a problem because the decision-makers do not have sufficient knowledge regarding the timing, resource needs and scope of the disaster event and this can slow the response and cause inefficiency in the disaster relief plans, indeed, (Barbarosoğlu & Arda, 2004) describe this as "a complex stochastic decision problem". Similarly, in Iraq, interviewees added that false reporting or fictitious accidents are considered a problem that can plague responders since the information is not accurate.

5.2.10 Misuse of Machines, Equipment and Material

After the training of disaster responder, it almost absolutely that the tools they use must work, as needed, each and every time, and that the staff can learn to operate them effectively (Madry, 2015). In agreement with this view, interviewees, in both directing and controlling stages, criticised kind of maintenance they obtained when maintaining their machines and personal equipment. Relying on only remedial maintenance (maintenance that is performed after a fault in order to correct that fault (Oxford University Press, 2004) instead of preventive maintenance (maintenance performed on a regular basis, and intended to prevent failures or to detect incipient failures) (Oxford University Press, 2004) might cause rapid deterioration of these machines. Consequently, huge operational problems probably happened to the disaster responder team at the scene. In addition to maintenance, not updating the equipment was also found as a negative point by interviewees.

5.2.11 Security cordon

By establishing a security cordon, disaster responders can be protected from danger. According to the College of Policing (2016), there are two types of cordons: an inner cordon and outer cordon. "The inner cordon encloses the scene of an incident and contains any area of hazard or contamination. The size of the inner cordon is determined by the incident. The outer cordon creates a safe working area for the emergency services and responding agencies. The radius of the cordoned area depends on the type and scope of the incident, the availability of resources and the needs of the community. The tactical commander determines this in consultation with other emergency services". In the context of Iraq, based on interviewees' opinion, there is often a failure in imposing a proper security cordon. Interviewees tried to give some reasons for this

failure, for instance, it could be attributed to adapting incorrect techniques in imposing the cordon in the first place, or having unclear cordon access authorisation, or the lack of expertise by local police in maintaining the cordon. This view was upheld by the questionnaire respondents. Figure 4.36 shows the gaps in implementing the "existence of the cordon" and "cordon access authorisation" factors. Such gaps further confirm the failure in applying this important cordon and adopting unsuitable procedures to access it by disaster responders. In agreement, some scholars see controlling the exclusion zone as being critical. According to Batho et al. (1999), to prevent further injury, physical danger or looting, controlling the exclusion zone is considered a critical process. On the day of the bomb blast in Manchester in 1996, and in the days after, there was a problem in ensuring access for those people who needed to get through the cordons, while keeping out any who did not require access. On the day of the blast, for example, getting through the barriers of the outer cordon was deemed as one of the difficulties faced by both emergency planners and building surveyors trying to travel into the city centre. In the days following the bomb, getting appropriate access for specific people past the inner cordon, while preventing access by members of the public was also a problem, as people still wanted to carry on as normal, even when they realised there was a bomb, and so maintaining the inner cordon once it had been established was extremely difficult (Batho et al., 1999).

5.2.12 Financial Resources

In Iraq, responses to disastrous calamities rely on the manpower and assets of the central and provincial government and with assistance from non-governmental agencies and international donors (Goodyear, 2009). In the USA, to effectively support emergency planning, the United States Federal Emergency Management Agency (FEMA) allocates substantial funds, particularly to product civil defence plans to counter possible nuclear attack, for example (Handmer & Parker, 1991). In comparison, in Iraq, from the interviewees' point of view of the planning stage, although financial support is very important in planning for an adequate response process, the Iraqi General Directorate of Civil Defence suffer from limited possibilities and budget restrictions. This happens because of the **failure in Budget allocation and mobilisation**. Questionnaire respondents upheld this point, based on the large gaps that appear in Figure 4.27; particularly the gaps related to "reserve funds for institutional strengthening" and "budget mobilisation" factors; this further confirms the lack of allocating and mobilising funds as being a weakness. This view was also supported by document analysis. According to Planning Department (2015), there is a need for the material capacity building as

well as a need to allocate the budgets for disaster management. This requirement is due to an increase in the financial resources necessary for the implementation of risk reduction program. In agreement, Iraqi civil services institutions declared that their disaster response capacity is impeded by primary constraints such as fiscal resources and manpower (Goodyear, 2009). Similarly, in the literature review, Taiwan local government did not have enough budgets to perform all four phases of disaster management (Chen et al., 2006). While in Turkey, strong financial resources are needed to agencies responsible for DRR (disaster risk reduction) activities. Such resources become inadequate when distributed among several units (Baris, 2009). Whilst in the USA, a major obstacle that was hampered emergency responders was their funding. Such funding was stalled and side-tracked due to three reasons: the slow distribution of funds by federal agencies, a politicised appropriations process, and bureaucratic red tape at all levels of government. In the Caribbean, the financial resources for community based disaster organisations and training programmes was lacked. This lack therefore, is considered as a main challenge for such organisations (Ferdinand et al., 2012).

In terms of emergency budget, some of the interviewees believe that financial process is hampered by **allocating authorization and limiting the choices made in emergency allocations**. The aforementioned view is upheld by the findings of the document analysis in Section (I.3). According to Planning Department (2015), the presence of red tape and a large number of committees is considered a major challenge to fund allocating process. Further, due to the lack of emergency allocations, it does not ensure except relatively little resources as a treatment and a preliminary intervention. On the other hand, interviewees have many challenges regarding employees' allowances such as overtime and transportation allowances, risk allowances. Such challenges might deter staff performance during responding to disaster.

5.2.13 Planning Process

Ongoing terrorist attacks worldwide are likely to sustain attention to disaster planning, mainly in the Middle East countries (Perry & Lindell, 2003). Further, due to such attacks on urban areas, disaster planning responses to human-made disasters is a growing area of serious debate within the field of urban management (Batho et al., 1999). In Iraq, based on interviewees' opinion that appears in the planning stage, there is an **ignorance of the importance of planning**. Such ignorance also appeared in the questionnaire respondents' answers, shown in Figure 4.26, due to the gap of "level of prior planning", "existence of an evacuation plan", and "flexibility in switching to alternative plans" factors, which indicate the limited attention to planning. According to Planning Department (2015), since the concept of **disaster**

management is a new idea, it needs a political support to include it in future programs and plans. For this reason, such ignorance might appear. Similar problems have arisen in the US within the context of creating plans for terrorist incidents; the assertion of the existence of a plan as a document rather than an assertion on the planning procedure brings positive outcomes for the threat (Jenkins, 2001; Smithson & Levy, 2000) cited in (Perry & Lindell, 2003, p. 336).

According to Barenbaum (N.D.), many organisations fall prey to numerous unexpected problem areas along the way, despite spending hundreds of hours into plan development. Often, the plan is ineffective or worse yet, improperly executed. In agreement and in the case of **plan implementation**, due to some interviewees' opinions, the plans are not implemented strictly. This was confirmed by questionnaire's responders' answers in Figure 4.26. It can be seen clearly that the majority of the planning process factors have a large gap. The document analysis is also in the opinion that there is a lack of contingency plans in a large number of important facilities, which is designed according to standardised criteria, and training on it. Further, there is a weakness in contingency planning for disaster risk reduction in projects of development plans and regional development projects (Committee 101, 2010). Moreover, According to Uhr et al. (2008) both the literature and empirical findings indicate that sometimes response operations diverge from existing plans when adapting to an event and its consequences. As the fact that the response to Sweden collapsed in 2005 did not follow fixed plans or procedures which are criticised by an officer who participated in the response operation. Majchrzak et al. (2007) support this view stating that in the immediate aftermath of catastrophic events, the government disaster response plans for organised and timely response broke down in unexpected ways and failed to meet the urgent needs of those affected. From interviewees' point of view, sometimes **the plans are unenforceable and cause confusion**. This might be due to the **lack of understanding of what has been planned**. As a result, there is a **weakness in the implementation of the plan**. Desforges and Waeckerle (1991) confirm this point, stating that poor understanding of the response plan is a recurring problem that plague response to disasters. This view was also supported by Committee 101 (2010) stressed on the weakness in contingency planning for disaster risk reduction in projects of development plans and regional development projects. Hills (1994, p. 71) on the other hand, criticised the emergency planning in the UK stating that it suffers from a lack of precision in some of its fundamental concepts, and has clichés that need to be eliminated. However, the unique character of each disaster and the poor understanding of the response plan are considered two of the recurring problems that plague response to disasters (Desforges & Waeckerle, 1991). Moreover, Kovel (2000) describe

the difficulty of disaster response planning as an incomplete puzzle with no guidelines on how to place them together even its pieces were present.

As regards **planning for public shelters**, several interviewees shed light on this problem. Similarly, a clear indication was given in Figure 4.26 by questionnaire's responders when the largest gap has been noticed between the importance of "prior planning of public shelters" and its implementation. Desforges and Waeckerle (1991) support this view stating that in order to anticipate needs correctly, the numerous problems a disaster poses must be first identified by the disaster response planners. Further, to meet the numerous needs created by disruption of services and major property damage, a comprehensive strategy is required by the disaster response planners.

Regarding **early warning systems**, despite the completion of the first stage of the early warning systems in all Iraqi city centres, interviewees and questionnaire respondents were agreed that this presents as a weakness. Committee 101 (2010), as shown in the document analysis in Section (I.2), also concurred with this point. Similarly, Humayun and Al-Abyadh (2014) argue that the provisions for adequate early warning systems are lacking in Iraq's existing DRR framework. Goodyear (2009) argues that this is partly due to the lack of synergy between the National Development Strategy and the National Disaster Management Plan, which causes there to be a lack of proactive preparedness and mitigation, including the early warning systems. Goodyear (2009) also points to the problems of cooperation and collaboration between disaster management stakeholders, causing emergency response mechanisms to be flawed.

In terms of **duties**, a clear indication given by interviewees about **overlapping duties**, which are not previously prepared within the work schedule and it might become emergency duties. In agreement, Handmer and Parker (1991) stressed that one of the problems of disaster planning is that goals set by central government may not appeal to those responsible for their implementation. Uhr et al. (2008) added that the roles of the various staff functions, during Sweden collapsed in 2005, were interpreted in differing ways, partly as exercising a decision function, partly as providing decision support and partly as something in between. This blurriness was also demonstrated in the response to the flood situation in southern Sweden in 2004. From interviewees' point of view, there was a weakness in response to disaster due to different capabilities and competencies and the extent of knowledge of the tasks and actions in responding to a disaster. This view is supported by Saeed (2012, pp. 3-4) who explained that due to the dynamic situation in a disaster, new activities (which have not occurred before) may be required apart from those already planned. So new plans have to be made and incorporated

with old plans and plans of other organisations. Terawi (2008) agreed with interviewees' view and added the most important obstacles facing crisis management are humanitarian challenges, organisational challenges, and challenges related to information and communication. Eight challenges are related to humanitarian challenges, as listed below:

a) Staff psychological and social side is not considered.
b) Deficiencies in the understanding of the vulnerabilities related to the crisis, trends and objectives.
c) Not taking into account individual and cultural differences between employees.
d) Not to verify the accuracy and reliability of data and information by the employees.
e) Not to do the capacity development and employees' preparations to endure pressure.
f) Failure in understanding employees' roles during the crisis and beyond.
g) Weak employees interest to efforts made by decision-makers about crisis management.
h) The appropriate academic qualifications are lacked from crises team.

However, several interviewees believe that **responding to disaster from other organisations** was time-consuming and weak. Planning Department (2015) confirm this point and attribute this to a **limited attention** by organisations and institutions in terms of preparing disaster response plan. However, Goodyear (2009) attribute the weakness in disaster management systems in Iraq to the absence of a central authority assigned to create a strategic plan among all participants, including non-governmental organisations and civil society also. Similarly, a clear indication was given in Figure 4.26 by questionnaire's respondents when a large gap has been noticed between the importance of "government unity of leadership to plan as a whole" and its implementation. Further, According to LeClerc (2015), despite putting plans by all agencies, they are not always coordinated properly. Further, the response plans that were previously developed by response agencies might forget to utilise when a disaster first occurs because these response agencies become focused on the immediate problems in front of them. Or some organisations might not have emergency plans (Comfort, 2002). Robert and Lajtha (2002) confirm this view stating that the vast majority of emergency response plans remain unknown to key persons who are likely to become involved with the disaster response. Regarding terrorist attacks planning, due to the involvement of different kinds of organisations that may not normally deal with one another (Desforges & Waeckerle, 1991) and because of working partnerships are crucial to the immediate response and subsequent recovery (Batho et al., 1999), an inter-organisational testing process is complicated (Desforges & Waeckerle, 1991).

Apropos **flexibility in planning processes**, based on Uhr et al. (2008) opinion, a complex and dynamic environment can call for certain flexibility in plans, organisation, and procedures. This point is overlooked in the planning processes and in bureaucratic structures. Questionnaire respondents confirm this view, shown in Figure 4.26, where the gaps of "flexibility in switching to alternative plans" factor are relatively large compared with the other factors, meaning that the flexibility in the planning process is limited.

With regard to **safety standards and construction codes**, from an interviewees' point of view, there was a weakness in the application of building codes and occupational safety standards in public and private facilities. This view was also supported by questionnaire respondents, illustrated in Figure 4.26, where the gaps of "enforcement of safety standards and construction codes" and "updating of safety standards and construction codes" are relatively large compared with the other factors in Section (4.8.1.1). This means that construction codes are neither updated nor implemented adequately. Document analysis confirms this point, stating that there is a weakness in the application of building codes and occupational safety standards in public and private facilities. Further, there is a weakness in the application of safety standards in industrial facilities and particularly Electrical Installations (Committee 101, 2010). Apropos **the establishment of new civil defence centres**, Urban Planning Department (2014) concluded that there is a failure in land selection to build up new civil defence centres according to the international standards in terms of population, area, and location (main road). Because of the majority of civil defence centres in the Baghdad Governorate (67.7%) are located on roads, which have a maximum speed of 30 km/h, as shown in Figure 5.1 below, delays in responding to disasters will usually happen and can, in turn, increase the number of losses.

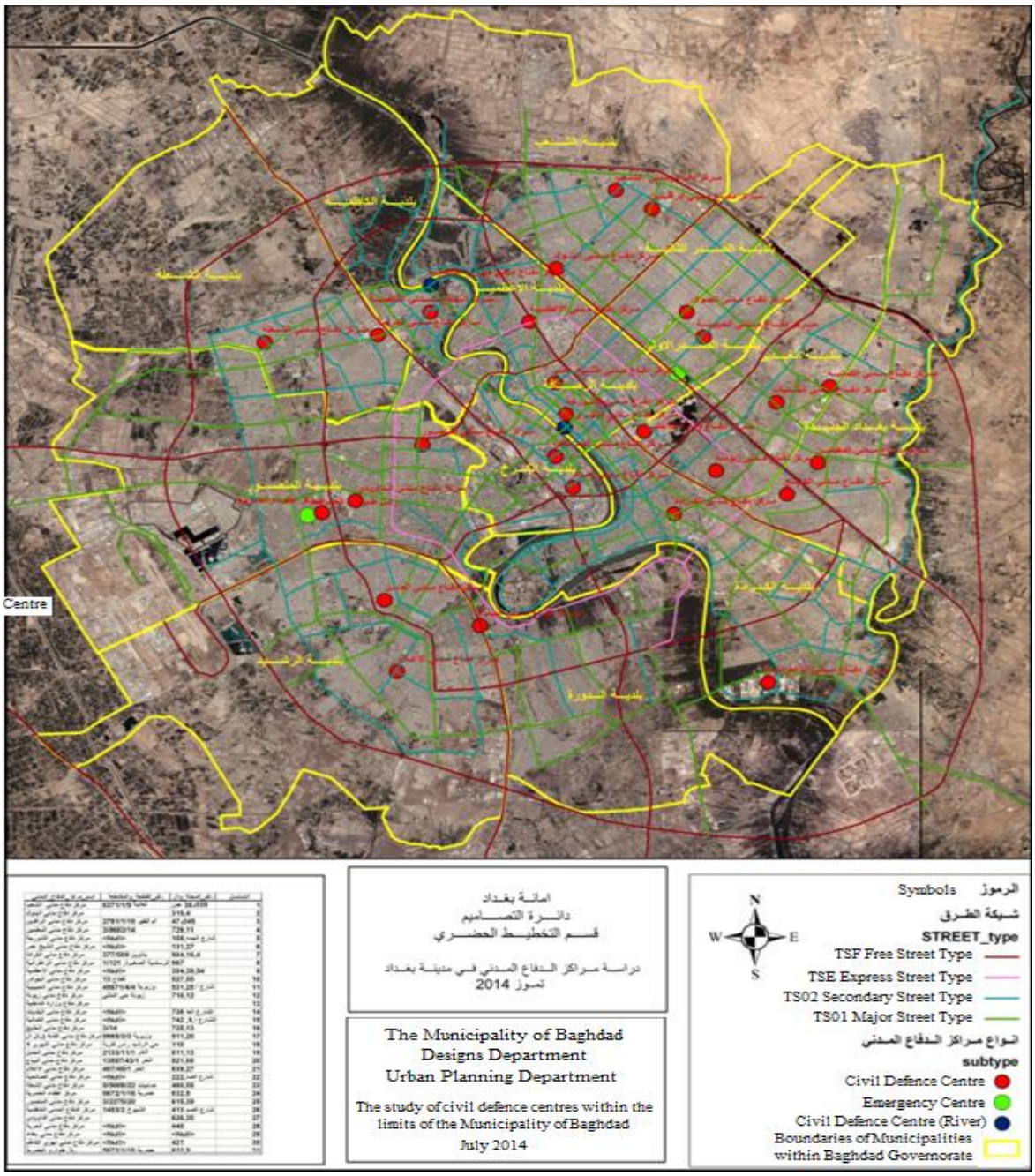


Figure 5.1 Plan of Civil Defence Centres Locations with Reference to Road Network in Baghdad Governorate (Urban Planning Department, 2014, p. 36)

Traditional methods for disaster management planning and training are proving to be ineffective and inadequate. Accordingly, a fresh approach to disaster management is required (Robert & Lajtha, 2002). Notwithstanding **the importance of feedback for the planning process**, there is a lack of feedback and taking the officers and staff members' proposals as well as the lack of seriousness in dealing with research and reports. This was confirmed by Planning Department (2015), stating that there is a **lack of studying and documenting the previous experiences** for the purpose of re-use them in program development. This view was also supported by Desforges

and Waeckerle (1991), reported that recurring problems that plague response to disasters arise from lack of accurate information from previous experiences. Further, one of the common reasons behind the failure of organisations in learning from and even repeat mistakes and errors is a failure to plan. The feedback loop between learning the lesson and changing behaviour might be broken-down if past mistakes are repeated. A lesson cannot really be said to have been learned if it is repeatedly repeated (Federal Emergency Management Agency, 2015). In agreement, Robert and Lajtha (2002) stressed that the enormous majority of disaster response plans are outdated by the time that they are published; are not kept up to date; are published in inappropriate formats, and contain reams of practically useless pages of information. In many cases, the existence of outdated disaster response plans is worse than having no plan at all. Such disasters may well develop into larger scale disasters for the organisations concerned because of inept/bungled emergency response actions/inactions.

Interviewees also faced other problems namely; **amendments to the plans** are the validity of the General Directorate of civil defence only and adequate opportunities are not giving for junior managers in planning. Conversely, Desforges and Waeckerle (1991) stressed on the errors in judgment that will be magnified rapidly as the response proceeds, especially those committed early. Other interviewees confirm the latter view, stating that there is inefficiency in decision making with respect to planning. This might be due to lack of competency of those in the central leadership of the ministry. However, other interviewees attribute this inefficiency to the lack of unified decisions. Questionnaire respondents confirm this view in their answers about "government unity of leadership to plan as a whole", which is illustrated in Figure 4.26, meaning that there is a limited collaboration between different organisations, causing there to be fragmented planning. Similarly in US, much of the terrorism plan creation directors, such as policy actors, law-enforcement officials, and elected officials, were lacked a general awareness of the literature on planning for natural and technological disasters (Jenkins, 2001; Smithson & Levy, 2000) cited in (Perry & Lindell, 2003, p. 336).

5.2.14 Supporting Ordinances

Based on the findings of the primary data, interviewees (talking about the planning stage) and Committee 101 (2010) in the document analysis, strongly believe that there is a "**lack of clarity in the mechanisms of the declaration of emergency in the disaster areas** and legal implications of this announcement" , "lack of a unified national legal framework for disaster risk reduction and response (the existence of multiple systems, leading to failures in the application when multi nature disasters occur)" as well as "state structural changes not being

reflected in the laws and regulations of disaster management from 2003 onwards (powers of the governors, the development of the region, the new ministries such as the Ministry of Science and Technology, Environment, and Displacement and Migration)". These points of view are also supported by questionnaire respondents' answers, which are presented in Figure 4.28. Similarly, Humayun and Al-Abyadh (2014) confirm that the existing laws do not take account of disaster contingency planning also it fail to assign the federal, governorate and district levels with the necessary responsibilities to respond effectively to disasters. This might indicate that the development of institutional and legislative systems for DRR in Iraq is adopting a reactive approach.

Furthermore, according to Humayun and Al-Abyadh (2014), there are a number of laws, which have a direct bearing on DRR, namely, the Public Health Law 1981, the Emergency Use Law 1969, and the Civil Defence Law 1978. Humayun and Al-Abyadh (2014) added that these laws enacted prior to 2003 fail to adequately address all of the vagaries of DRR because the issue of the disaster was not addressed in a holistic manner when these laws were designed. Humayun and Al-Abyadh (2014) concluded that the lack of standards and criteria for assessing cases of emergencies in Iraq is one of the most significant weaknesses in the existing disaster legislation, especially such legislation that is unequipped to assess and respond to multi-hazard risks. Further, there is a failure in addressing mitigation and preparedness by the two key laws relating to DRR, the Emergency Use Law 1961 and the Civil Defence Law 1978, which were provided for relief and response mechanisms for addressing hazards. Additionally, to provide support and care for victims in the event of a disaster, the Social Care Law No 126 of 1980 has been placed to provide such assistance by the State of Iraq. However, the provided support is not delivered in detail through this law. Although the scope of the Social Care Law in relation to disaster response is complementary to the Civil Defence Law, the two laws do not cross-reference each other (Humayun & Al-Abyadh, 2014).

However, in Taiwan, supporting ordinances and regulations have not been developed well at different government levels (Chen et al., 2006). Whereas in the United Kingdom, the organisational and legislative arrangements for disaster response are extremely complex (Hills, 1994). In addition to this issue, although most of the interviewees praised the updated Civil Defence Law No (44) for the year 2013, other interviewees criticise the deactivation of some important sections such as the law of teaching the civil defence curriculum. Accordingly, community awareness can be decreased and might have a negative effect on response process.

Interviewees were of the opinion that although Civil Service Act No. 24 of 1960 ensures employees' right to travel outside Iraq or to complete their study, key official put a lot of barriers in front of staff, for example, staff is not allowed to travel outside Iraq until obtaining the approval from the Minister. Such approval might take more than one year. In addition to this matter, other interviewees criticise the lack of awareness of the laws from the various organisations. Such lack might lead to delay in responding to the disaster.

However, the absence of special civil defence courts in the provinces is another challenge facing the response process. Questionnaire respondents confirmed this point in their answers as shown in Figure 4.28.

5.2.15 Coordination within the Organisation

During complex incidents, rapid coordination is deemed as critical to support a fast response given the chaotic nature of such incidents. Based on Goodyear (2009) opinion, a comprehensive and coordinated disaster management system of risk management is lacking in Iraq. According to interviewees' opinions that emerged in the organising stage, although the overall organisation process is good, there are many weakness points such as the incorrect distribution of tasks, the failure of some officials to do their responsibilities, the decentralisation of some administrative decisions, and cancelling or merging branches within the organisational structure. The questionnaire respondents' views, that are illustrated in Figure 4.30, also supported this position, where the gaps between "reasonable organisational structure and clear awareness of responsibilities" and "volunteer management" are relatively large compared with the other factors in Section 4.8.2.1. Such a gap might emerge because of the delays that have occurred in updating the organisational structure, which has led to chaos in delegating different responsibilities at different levels. In addition to this, such a large gap indicates that the management of volunteers before, during, and after a disaster is limited. In Turkey, based on Baris (2009), many organisational and institutional problems have been appeared in organising a proper disaster management and response system. One of these problems is the absence of a single organisational structure focused on disaster management, containing all disaster management aspects. As a result, the impacts of disasters has been dramatically exacerbated. Chen, Sharman, Rao, et al. (2008) also saw the coordination of disaster response is so challenging because it involves factoring in exigencies typical of an emergency situation such as sudden and unexpected events; great uncertainty; high amounts of time pressure and urgency; the risk of possible mass casualty; large-scale impact and damage; severe resource shortages; and the disruption of infrastructure support necessary for coordination like telecommunications,

electricity, and transportation. Similarly, Mohammadfam, Bastani, Esaghi, Golmohamadi, and Saee (2015) stated that the most important challenge that may lead to breakdowns to the response between teams is a lack of coordination. It is also accepted as a crucial hidden problem which has been principally ignored. Moreover, Uhr et al. (2008) concluded that the distribution of authority in the disaster response was often unclear and sometimes confusing.

5.2.16 Correspondence Delays and Red Tape

Although red tape appears significantly in real-world endeavours to foster performance of public organisations, it could be a negative phenomenon, which can be negatively associated with job satisfaction. According to the interviewees' points of view, one of the major challenges facing various management systems in the directorate is the bureaucratic red tape. This theme emerged in the organising stage. The document analysis of Planning Department (2015) supported this opinion, stating that "the presence of red tape and a large number of committees, especially at a financial exchange process" are considered one of the challenges facing the directorate. Moreover, Ljungholm (2014) concluded that the red tape is an obstacle to public sector performance. Besides that, Schneider (1992) admitted that the problems under unusually severe disaster circumstances are exacerbated by bureaucratic policies and procedures.

5.2.17 Nepotism and Cronyism

After the fall of the former regime in 2003, several parties have emerged on the political scene. Such parties tend to take their roles in various institutional administrative systems by activating the role of cronyism. From an interviewees' point of view that emerged in the organising stage, by doing so, loyalists for those parties might be appointed without relevant professional experience to be qualified for their posts. Consequently, the extent to response to a disaster could be affected negatively. Similarly, in the USA, it appears to have been cronyism surrounding many political appointments in the FEMA (Federal Emergency Management Agency) and the DHS (Department of Homeland Security), which were considered particularly damaging given the importance of the roles, indeed it was argued that this was one of the underlying causes of the "worst failures of crisis leadership in recent US history (the response to Hurricane Katrina)" (Boin et al., 2010). This view was supported by the questionnaire respondents, as "generating an appropriate delegation of tasks and division of labour" had a gap quite similar to the majority of other factors shown in Figure 4.30, this indicates that there is an inefficient and ineffective allocation of duties.

5.2.18 Employees' Rights

Responders provide a huge effort when the disaster strikes, as a human response, but it is important that they understand and know the law that might ensure their rights. Both interviewees and Desforges and Waeckerle (1991) agreed that post-traumatic psychological problems can face both the rescuers and the victims because of the horrors of a disaster. Despite that, from interviewees' point of view, that emerged in the organising stage, unfortunately, the employees in the Iraqi General Directorate of Civil Defence are unaware and unknowing of their rights in different aspects, for example, the system of daily working hours, vacations and travel outside Iraq, health and life insurance, as well as periodic medical and fitness examinations, and ensuring easy and quick compensation and rights for those who are exposed to injuries during the accidents. Since there is an obligation on the State of Iraq placed within the Social Care Law No 126 of 1980, according to Humayun and Al-Abyadh (2014), assistance and support to victims in the event of a disaster is provided by the state. But, there are two problems in implementing this obligation: firstly, the aforementioned support does not provide detail and secondly, although the scope of the Social Care Law in relation to disaster response is complementary to the Civil Defence Law, the two laws do not cross-reference each other.

5.2.19 Hierarchy and Centralization Problems

When responding to complex incidents and tasks, hierarchical organisations might face challenges. Consequently, it is quite possible tasks cannot be performed effectively because the capacity of the individuals at the top can be exceeded when the incident is complex. According to some interviewees' opinions, that emerged in the organising stage, the presence of more than one system of leadership caused a failure to obtain satisfactory results, while others mentioned the problem of decision-making when responding to disaster, as well as the problem of officials' experience and their level of scientific knowledge. These were confirmed by questionnaire respondents' answers in Figure 4.32. It can be clearly seen that all the factors in this Figure, except for "clearly defined goals and commitments by key stakeholders", have a similar gap. This means the clarity of determining goals and commitments is insufficient. The document analysis also shows that there is a "lack of clear exceptional administrative powers during disasters on the various administrative levels" (Committee 101, 2010). Further confirmation of this aspect is demonstrated in the literature; according to Withanaarachchi and Setunge (2014), there is a failure in carrying out the most important aspect of decision making during disasters. Such failure happened from the highest ranking officer to the lowest ranking officer who was involved in decision making due to the breakdowns in the chain of command. Platt (2015)

confirms this view and added as a disaster requires critical decisions that should be made in awkward situations, a series of dilemmas might be faced disaster decision-making. Besides that, Torma-Krajewski and Powers (2010) affirm that the success of disaster response is dependent upon effective decisions being made in a timely manner. Therefore, it is a critical component of any disaster response. Uhr et al. (2008) agreed with interviewees' views and added that the distribution of authority in the disaster response was often unclear and sometimes confusing. However, the impacts of disasters might be exacerbated due to the absence of a single organisational structure focused on disaster management in Turkey (Baris, 2009), in Taiwan, one of the many issues appears in the past five years is that the coordination mechanism did not develop well between the central government and local governments (Chen et al., 2006). Moreover, Terawi (2008) illustrates different organisational obstacles:

a. Lack of interest by the top management of crisis management.
b. The weakness of harmony and coordination between senior management and the departments and sections.
c. Curtail the role of administrative leaders during a crisis.
d. The tendency of organisations to the central decision-making during a crisis.
e. The weakness of the presence of a clear definition of tasks and responsibilities that lie with crisis manager.
f. The weakness of rehabilitation and training policies offered in the field of crisis management.

5.2.20 Staff Movement and Reduction of Sections

It is widely acknowledged that high levels of personal fitness and stamina are usually demanded in many sections of the directorate of civil defence to remain active in such sections. By knowing pre-existing medical condition (Hypertension, Asthma, and Epilepsy) or an inadequate personal fitness level, measures can be taken to ensure that no one is put at risk. Based on interviewees' opinion, by moving a lot of employees who are unfit to work from different branches of the Ministry of Interior, such as the federal police department to the directorate, this can lead to a massive problem within the directorate as it mentioned in Section 4.5.5. Interviewees have also highlighted the staff reducing and a reduction of sections, thoughtless transfers of experts inside and outside the Directorate and staff changes, which can cause confusion within the directorate. Such problems might happen due to ill-considered decisions. Accordingly, this confusion might be reflected on the whole responding process.

5.2.21 Communication and Information

One of the most critical requirements for various aspects of Disaster Management is communication. Such requirement is vital during a wide range of actions to impart knowledge and information in order to increase public awareness and mass education, call up various resources and intimation to authorities, warn of the impending threat of disaster, and conducting disaster management in general. Based on some interviewees, within the directing stage, there is a **weakness of telecommunications networks during disasters** because there are often no alternatives or due to **outdated communications devices**. Questionnaire respondents' answers support this view regarding "Emergency public information (communication outside organisations)" factor and there answers unsupportive regarding "Effective communication mechanisms communication (inside organisations)" factor through the gap analysis that appears in Section 4.8.3.2. Committee 101 (2010) within the document analysis also supports this view. In agreement, Humayun and Al-Abyadh (2014) stressed that there is no dedicated communication system in place to alert provincial, regional and local governmental organisations in at threat places. According to Comfort and Haase (2006), the responsible organisations' capacity is seriously hampered by the severity of disruption in the communications infrastructure. As a result, building technical support is needed to conduct an organisational action in disaster response. Moreover, during the 2005 Katrina flood, **failures in communication** is considered one of the shortcomings in federal emergency response (Baker & Refsgaard, 2007). Failure of communications is also one of the common reasons organisations fail to learn from and even repeat mistakes and errors (Federal Emergency Management Agency, 2015). Banipal (2006) found that the inter-operability issue was a major operational problem experienced during hurricane Katrina. Because of the **existing system was not scalable enough to support hundreds of additional users**, the out of state volunteers were unable to use it. In agreement, Manoj and Baker (2007) stated that communication, particularly, lack of radio interoperability, is considered a major challenge in responding to disasters. The inter-agency communications were extremely difficult because each group communicates with radios set to orthogonal frequencies. Consequently, when more groups become involved the problem is compounded. Further, according to GSMA (2012), in times of political or environmental disasters, coordination between mobile network operators and governments can be difficult, particularly in countries that have highly centralised or authoritarian regimes. Therefore, one of the common reasons behind the failure of organisations in learning from and even repeat mistakes and errors is a failure of communications (Federal Emergency Management Agency, 2015).

In terms of information, Comfort et al. (2003) indicate that different types of information are required during different phases of disaster response. The efficiency of information flow throughout the network of responding organisations is enhanced by accessing to core information. Moreover, Bharosa et al. (2010) show in their surveys that information and system quality is one of a number of obstacles facing individuals when responding to a disaster, despite the fact that they are aware of the need for information sharing and coordination. Ferdinand et al. (2012) support this view stating that because of poor information sharing, collaboration between organisations was found to be minimal. From an interviewees' point of view, because of the **lack of intelligence information** to figure out who and when and where gets the terrorist incident. Many responders are killed as discussed in document analysis section 4.10.1. Ogasawara et al. (2014) support this view stating that gaps in available information in the immediate aftermath of large, wide-area disaster can result in fatal delays in decisions for the most urgent lifesaving response activities. Sinclair et al. (2012) added that although there is information available about decision making, not all emergency managers understand its relevance to emergency management or aware of the existence of this information.

Regarding **Emergency public information**, the questionnaire respondents, that are illustrated in Figure 4.34, said that there is little transparency when transferring information about the disaster to the public, so the gaps between "transferring information about the disaster to the public from the organisation or vice versa" and "providing appropriate reports for the media" are relatively large compared with the other factors in Section 4.8.3.2.

5.2.22 Frequent Blackouts for the National Electricity

Since the First Gulf War in 1991, Iraq has suffered from programmed cutting off of National Electricity. Due to frequent cutting off in any 24 hour period, the illegal wiring is connected to the national grid by households as well as random wiring, especially for Simi-Generic Generators. All these consequences can prevent the arrival of civil defence teams to the scene or sometimes lead to more losses amongst responders' teams. However, weakness in the electrical network maintenance and absence of quality control on imported materials, particularly electrical, can have a huge impact on safety. This theme appeared in the directing stage.

5.2.23 Morale and Financial Incentives

It is widely acknowledged that incentives might play as a chief motivational force in any business. In a disaster situation, performance can be improved and fostered by rewarding

employees with financial incentives, such as bonuses, or morale incentives, such as acknowledgement letters. Based on interviewees' opinions, within the directing stage, in Iraq, financial incentives were given to motivate the disaster responders, but the authority of giving financial incentives is exclusively limited to the director of the General Director of Civil Defence in Baghdad. Consequently, employees in all Civil Defence branches in all Iraqi cities might not have this reward. This view was also supported by questionnaire respondents in their answer about "the effectiveness of the financial incentives provided" and so the gap is large compared to the other factors in Figure 4.36, which indicates that providing this kind of incentive is inefficient and ineffective because it is limited to the key officials. Similarly, Both interviewees and questionnaire's respondents criticised morale incentives that are given to employees from heads of departments or general managers because there is no financial benefit from them. However, a promotion of 6 months or one year (with consequential financial reward) will be awarded from the Prime Minister and the minister.

5.2.24 Providing the Right Relief Supplies for People in Need at the Right Time

One important aspect and difficulty at the same time, in the first few days after the disaster, is finding the best assignment of available resources to affected areas. There are three limiting factors affected this process, namely, time, quantity and quality of the resources. Therefore, disaster managers should locate an optimal schedule for allocating resources in space and time to the affected zones. This problem is hard to solve due to the difficulty in processing and assessing all incoming information in an adequate manner (Fiedrich et al., 2000). Based on the findings of the primary data, one of the interviewees upheld this view, within the directing stage, and added that in some cases there is an exaggeration of logistical supply. Such mistake in the allocation of resources might result from the lack in accessing the actual situation in a right manner. At the same time sending wrong or too many supplies means losing resources and time (Smirnov et al., 2007). Similarly, dispatching more resources than the victims actually need by response organisations in actual events might lead to time lag to return their resources to the normal level, particularly when they use all of them in the beginning stage of a disaster. Since, the local first-responder resources are often overwhelmed by large-scale emergency incidents, such as acts of terrorism, human-caused accidents, and acts of nature (Larson et al., 2006), the delays in deployment and mistargeting of aid is considered one of the shortcomings in federal emergency response during the 2005 Katrina flood (Baker & Refsgaard, 2007). Comfort et al. (2003) discuss this point stating that although organisations might have

resources, inefficient distribution might happen, which may lead to a serious problem of coordination. The above views were confirmed by questionnaire respondents' answers in Figure 4.35. It can be seen that the majority of factors in this Figure have a relatively large gap, except for the gaps for "inventories of emergency resources" and "determination of the locations of emergency resources" factors. Questionnaire respondents further pointed out that there is a large gap in implementing the "application of modern logistics technology" compared with the other factors in Figure 4.35. This means that applying modern technology such as GIS is limited when providing resources, as well as being an inefficient and ineffective procedure to obtain, position, maintain, and assess the resources.

The literature further supports the above view, based on Muaafa et al. (2014) techniques for supplying optimal strategies for disaster resources to respond efficiently and effectively to disasters is still lacked, although there were several studies contributed to improve disaster response plans, particularly the disaster resources scheduling problem. Further, one of the common reasons behind the failure of organisations in learning from and even repeat mistakes and errors is resource conflicts (Federal Emergency Management Agency, 2015). Moreover, it is very difficult to assess the damage, impact and resource need precisely beforehand because it is almost impossible to know the timing and the intensity of any calamity (Barbarosoğlu & Arda, 2004). Comfort and Haase (2006) support this view stating that actual performance failure might happen under stress of disaster if the current knowledge of resources and risks are lacked. In contrast, in the UK, a co-ordinated response is possible because disaster response is organised at the local level, where knowledge of available resources is most complete (Batho et al., 1999). However, in the USA, one of the least understood problems in public management is the effective mobilisation of response to extreme events on a large scale (Comfort, 2002). Madry (2015) added that getting the right resources and people to the right place at the right time is the greatest challenge.

5.2.25 Speed of response

Complex problems with serious consequences that are emerged from disaster situation need to be solved in a very short amount of time in order to limit destruction to individuals, property and environment (Torma-Krajewski & Powers, 2010). In agreement, Madry (2015) stressed that time is the real enemy when responding to a major disaster. In a similar way, Miller (2007) noted that time should be considered when examining disaster response. Interviewees in their responses, which emerged in the directing stage, confirm these views and attribute the delay in responding to disaster to different causes, such as, multiplicity of responsible agencies,

multitude of decision sources, delay in reporting, delay in entering some sensitive areas, lack of financial allocation, lack of understanding of the guidance or orders, support delay from the other organisations when requesting heavy rescue equipment, defective equipment and devices as explained in Section 5.2.2. Questionnaire respondents upheld these views, based on the gap analysis that appeared in Figure 4.36; particularly the small gaps related to "very short response time to start the emergency plan", "evacuation", and "the clarity of tasks and responsibilities" factors. This indicates that there are slight delays when responding and evacuating the victims, due to different reasons as presented above, in addition to limited clarity of allocating tasks and responsibilities. The upheld these views and concluded in his study that the arrival speed of civil defence vehicles will be reduced because of the majority of civil defence centres in Baghdad Governorate (67.7%) located on roads, which have maximum speed 30 km/h. Such Location will decrease the speed of civil defence vehicles to arrive at the scene and can raise the number of losses. Perry and Lindell (2003) added another two points to aforementioned factors, namely, inadequate information and risk assessment, that are quick reactions based on them. Such points might cause response delay and insufficient protective measures. In addition to above points, the sheer amount of debris and broken glass can also cause a serious delay in ambulances arrival to the scene of a bomb blast in Manchester at 1996 (Batho et al., 1999).

5.2.26 Risk Assessments

Within disaster stress, actual performance might almost fail, if the current knowledge of risks and resources is absent (Comfort & Haase, 2006). Further, planners' inability to anticipate potential hazards and to appreciate their significance may cause humanitarian disasters (Goodyear, 2009). In addition to this issue, essential information might be provided by risk assessment. Such assessment still needs to be conducted in Iraq (Humayun & Al-Abyadh, 2014). Based on the findings from primary data, this view is upheld by interviewees' responses that emerged in the controlling stage: there is "failure in conducting proper risk assessments and mapping". This failure might be due to a lack of modern equipment for risk assessments or incorrect estimation of the scale of the disaster. Questionnaire respondents' answers support this view regarding "Conducting risk assessments", "Developing techniques for assessments", and "Hazard evaluation and mapping" factors through the gap analysis that emerged in Section 4.8.4.1. Their answers in Figure 4.33 and Figure 4.37 further upheld the interviewees' view. It can be seen that "Hazard monitoring and forecasting", "Scaling of the disaster", and "Hazard evaluation and mapping" factors in these Figures have a noticeable gap, which indicates that disaster scaling and hazard monitoring, forecasting, evaluation and mapping is limited.

Humayun and Al-Abyadh (2014) also support this view stating that prediction capabilities and necessary monitoring to supply timely estimates of possible risks faced by publics, the environment, and the economy have yet to be developed. Moreover, scientific equipment and human resources that are used to assess and monitor risk are lacked in government departments; those are responsible for undertaking risk assessments and monitoring. Similarly, based on Goodyear (2009), risk analysis based on an inspection of risks and the vulnerabilities and capacities of the first responders charged to assist in times of emergencies and resident populations that are included in Iraqi risk management is lacked.

5.3 Summary of the Weaknesses

To sum up, many weaknesses were revealed from the interviewees' transcriptions, questionnaire respondents, document analysis, and the literature review. Twenty-six weaknesses as sub-themes have been recognised in this section. Two of these weaknesses appeared in all four stages of disaster response management, namely, coordination between organisations and commanding the scene and endowment of equipment, and tools and infrastructure; whereas nine points of weakness appeared in two different stages. The rest of the weaknesses appeared in only one stage. The majority of these points emerged from both primary and secondary data. Notably, eight themes emerged from only the primary data, such as the difficulties in reaching the disaster scene, the security situation, unplanned random development, misuse of machinery, equipment and materials, employees' rights, staff movement and reduction of sections, frequent blackouts of the National Electricity, and morale and financial incentives. Only one theme, that of trust, emerged in the secondary data, yet did not appear in the primary data. Interestingly, the weaknesses were determined either stemming from external challenges or being present within the internal disaster response management. The following section will discuss the findings of the strengths during the planning stage.

5.4 Strengths during Disaster Response Management

Different points of strengths have emerged from interviewees' responses in the four disaster response stages. In this section, a cross analysis for these strength points will be conducted for the four stages of management, as presented in Table 5.2.

Table 5.2 Strengths during Disaster Response Management Stages

Strengths \ Stage	Planning stage	Organising stage	Directing stage	Controlling stage
Endowment of Equipment, Tools and Infrastructure	X		X	X
Disaster Response Team Characteristics		X	X	X
Education about Disaster Risk	X			
Planning Process	X			
Supporting Ordinances	X			
Coordination		X		
Decision-Making			X	
Morale Incentives			X	
Feedback				X

5.4.1 Endowment of Equipment, Tools and Infrastructure

This theme emerged in three stages, namely, planning, directing, and controlling. Despite having a gap in implementing the "endowment of equipment, tools and infrastructure" factor, which indicates the shortage of some equipment, as shown in Figure 4.26, interviewees believe that **equipment and devices are very good**. However, at the same time, they stressed that there is a shortage of heavy rescue equipment, for instance, aviation, which consequently leads to request them from relevant organisations when responding to disaster. This procedure can lead to the late arrival of the supporting rescue mechanics. In addition to this issue, despite having **modern and fast vehicles,** there is a lack of modern and effective devices in terms of detecting explosives, positioning information GPS, and software, particularly in the field of planning. Besides that, although interviewees praised **light rescue mechanics** as another strength point, they, at the same time, criticised the misuse or incorrect usage of machines, equipment and resources and the failure in maintaining them regularly as discussed in Section 4.3.1.4.

Apropos **communication devices**, based on interviewees' opinion, in spite of the speed or effectiveness of such devices, at the time of disaster, they were extremely overwhelmed with hundreds of additional users, particularly if these devices were outdated, the communication problem was compounded.

According to interviewees' opinion, although, **support for civil defence directorates' infrastructure has existed** through building modern infrastructure, there is a dearth of such infrastructure. As each civil defence centre covers a specific area of each Iraqi city, to have a full knowledge of all the details of such geographical area and projects is impossible, for

example, there are 63 civil defence buildings in Baghdad alone, based on document analysis that was discussed in Section 4.10.5.

5.4.2 Disaster Response Team Characteristics

In major incidents, sufficient staff with good training might be identified as a critical factor for effective disaster response. It is expected that the disaster responder team will respond to the incident as effectively and reasonably as possible to achieve high performance in the actual response operations (Mohammadfam et al., 2015). To do so, based on interviewees' opinions, which emerged in three deferent stages, namely, organising, directing, and controlling, having accumulated experience, precise skill, speed, efficiency, preparedness through being on stand-by 24/7, having a strong military hierarchy, proactive detection of the threat, boosted morale, work commitment, altruism, chivalry, magnanimity, quick and courageous reaction without hesitation in facing all types of accidents, are all positive features for disaster responders in Iraq. Moreover, despite the shortage in staffing within the directorate, they are characterised by their extensive practical experience and scientific qualifications. Further, although there are different causes for delays in responding to a disaster, as discussed in Section 4.5.1.11, interviewees assert a **quick response and good organisation**, particularly speed in transferring the injured, evacuating the victims and moving the deceased. To prevent further casualties, notwithstanding this, a lack of modern and effective devices to detect explosives as explained in Section 4.5.2.2, there is **proactive detection of a second or subsequent incident**. Sometimes this detection with such devices causes a lot of responders to lose their life. Because of the **altruism, chivalry, and magnanimity**, which are the most common features between not only disaster responders, but all Iraqi society when a large-scale disaster happens, they sometimes rush to intervene and save lives before even the completion of the detection process. In addition, interviewees praised people **relying on an official who has experience, personality, and decision-making ability** notwithstanding individual mistakes and misplaced judgement that might happen while responding to a disaster, as discussed in Section 4.5.1.6. In agreement, according to Emanuele et al. (2009), professionalisation in managing disaster can lead to a relevant staff rationalisation.

5.4.3 Education about disaster risk

Based on interviewees' opinion within the planning stage, **specialised courses** have been conducted for staff to deal with different kinds of disasters. The Planning Department (2015) support this, stating that workshops and training courses were held in first aid, rescue, evacuation, and disaster medicine to train staff of the Civil Defence Directorate to perform the

duties mandated. Questionnaire respondents, in their answers, confirm this point. It can be seen from Figure 4.29 that the gap for "specific training of professionals such as rescue workers and medical staff" is small compared with the other factors. Several interviewees, meanwhile, attribute the appearance of this small gap to the lack of internal and external courses, particularly those specialised courses in the field of planning, which are very rare (see Section 4.3.1.3). To gain knowledge and exchange information and experience from other countries, some courses, in particular, external ones, were sometimes assigned to specific staff. This might happen because of favouritism and influence of relations with political parties.

Committee 101 (2010), the Planning Department (2015) and interviewees have the same opinion regarding the **existence of prior practices** to deal with the disasters in the provinces, but at the same time there is still an urgent need for more training and development, more technical knowledge and skills in planning, and exercises for better preparedness and response, especially with regard to the national plan to respond more effectively to disasters. Gap analysis in Figures 4.26 and 4.29 attributes this view in terms of implementing "disaster drills, rehearsals and simulations" and "the extent to which emergency plans are rehearsed".

Regarding **self-protection teams**, interviewees strongly affirmed that each organisation has a continuous rehabilitation for the self-protection of teams during the year. This view was supported by questionnaire respondents. As shown in Figure 4.29, although there was a good implementation for "undertaking public educational activities", there was a weakness in implementing "community capabilities audit". This large gap appears because such activity might not cover all society's segments. The Planning Department (2015) upheld this view, stating that school students, employees in organisations and projects have been trained on the acts of civil defence and how to conduct themselves during major accidents and emergencies. Moreover, although seminars and courses are carried out in the organisations and projects by the Environmental Protection police centres in Baghdad and the provinces in order to raise awareness of the causes of disaster risk for some society segments, still these seminars are insufficient to cover all society segments to build capacity.

5.4.4 Planning Process

According to the Emergency Management Australia (2004), to build a community's ability to cope with the impact of emergencies and to minimise the hazard effects, plans and programs preparation for response actions should be taken during and immediately after a hazard impact. Moreover, by conducting well-thought-out and rehearsed response planning activities, lives can

be saved (Larson et al., 2006). In Iraq, despite the gaps that appeared in the implementation of the following factors: "applicable emergency response plan and regulations", "the level of prior planning", "pre-determined strategies", and "drawing up organisational disaster plans and integrating them with overall community-mass-emergency plans" and despite the ignorance of the importance of planning by key officials, the Directorate do have **proper planning**. According to the Planning Department (2015), such ignorance might appear because the concept of disaster management is a new idea in Iraq. Therefore, political support is needed to include it in future programs and plans. Proper planning was considered as a strength in the planning stage, from interviewees' perspectives, due to **continuous work on planning**. Further, because the plans are **developed with clear visions, goals, objectives and tasks**, it became **applicable and realistic**, but sometimes the plans are unenforceable and cause confusion or the plans are not strictly implemented due to the lack of understanding of what has been planned or due to overlapping duties. Many scholars, for instance, Barenbaum (N.D.), Desforges and Waeckerle (1991), Hills (1994, p. 71), Majchrzak et al. (2007), and Uhr et al. (2008) support the aforementioned interviewees' view as discussed in Section 4.3.1.7.

Regarding the **existence of a general contingency plan** and sub-plans, both interviewees and questionnaire respondents have the same point of view on this matter. Committee 101 (2010) also supported this point, stating that the emergency plan exists in key ministries (the Ministry of Health and Ministry of Interior / Civil Defence Directorate) to tackle disasters. In addition, vigorous efforts have been maintained to secure a national contingency plan for some specialised types of disasters such as radiological, chemical, and biological emergency plans. Such contingency plans, at the same time, do not cover all the important facilities as discussed in 4.3.1.7.

In terms of **updating plans, information, safety standards, and construction codes**, because the **planners have the technical and academic expertise**, updating and following-up is a continual process in the directorate, based on interviewees' opinions. They, at the same time, criticise the fact that they do not have the authorisation to amend the plans because this authorisation is limited to the General Directorate of Civil Defence only. The questionnaire analysis revealed the same findings regarding "continually updating obsolete materials (documents) and strategies", "systematically maintaining disaster and loss inventory", "enforcement of safety standards and construction codes", and "updating of safety standards and construction codes". Whilst Committee 101 (2010) confirmed the interviewees' opinion regarding the existence of codes of Construction and Safety Standards, they simultaneously

criticise the weakness in the application of building codes and occupational safety standards in public and private facilities, particularly the Electrical Installations.

As regards the **knowledge of the geographical area for each civil defence centre**, several interviewees shed light on an important feature of the current planning process, which is the **periodic inspection of organisations and facilities**. Bi-annual inspections have been conducted for each geographical area (each centre). Each geographical area has different types of infrastructure, which are classified into three classes (A, B, C), depending on the nature of their activities, importance, and the degree of vulnerability. The Urban Planning Department (2014) in the document analysis confirms this point, as discussed in Section (I.1).

Regarding **studies about disaster management**, based on interviewees' opinion, despite the fact that there are research reports submitted by officers and staff members in order to develop the work, remove the obstacles, and add new things, there is, at the same time, a lack of seriousness in dealing with such research reports. According to the Planning Department (2015), although there is a lack of study and documentation of previous experiences for the purpose of re-using them in program development, there are studies which have been prepared by the staff of the Civil Defence Directorate about the types of disasters and their consequences, and how to reduce their risks. Further, the General Directorate of Civil Defence is the most prominent stakeholder in preparing a framework for disaster management strategy in Iraq. In the field of planning and providing information, there are studies submitted by researchers in universities, or from those concerned with disasters, which can be used for further development.

5.4.5 Supporting Ordinances

There are a number of laws, which have a direct bearing on DRR, namely, the Public Health Law 1981, the Emergency Use Law 1969, and the Civil Defence Law 1978. However, these laws, enacted prior to 2003, fail to adequately address all of the vagaries of DRR since the issues of the disaster were not addressed in a holistic manner when these laws were designed (Humayun & Al-Abyadh, 2014). In addition, interviewees (experts) within the planning stage, document analysis from Committee 101 (2010), and the Planning Department (2015) appreciate the importance of the **updated Civil Defence Law No (44) for the year 2013** in organising work in the field of disaster management, despite the deactivation of some important sections, such as the law of teaching the civil defence curriculum. Moreover, based on interviewees' opinion, there are **work guides for civil defence centres**. The questionnaire shows a similar level of implementation in all elements, except "the involvement of local jurisdictions" factor,

that has a slightly larger gap as shown in Figure 4.28. Interviewees agree and attribute this point to the **creation of a particular civil defence court in Baghdad only,** whereas other branches in the provinces do not have such a court.

5.4.6 Coordination

It could be argued that effective coordination is an essential ingredient for disaster response management. Based on the findings of the primary data, several interviewees, within the organising stage, believed that despite having some weaknesses in this theme as discussed in Section 5.2.15, generally, there is **good organisation,** due to proper leadership, central decisions, strong military hierarchy, working as a team, continuous documentation, and lack of overlap in work between units, departments, and branches within the directorate. The questionnaire respondents, illustrated in Figure 4.30, supported this view, with the gaps between "coordination between departments within the organisation" and "search and rescue" are relatively small, compared to the other factors in Section 4.8.2.1, which indicates that there is good coordination within the directorate. Document analysis also added that the General Directorate of Civil Defence is the most prominent stakeholder that has prepared a framework for the disaster management strategy in Iraq (Planning Department, 2015).

Even though a comprehensive and fully coordinated disaster management system of risk management is lacking in Iraq (Goodyear, 2009), the General Directorate have good management due to following-up every element, and enthusiastically working hard to develop the adoption of scientific methods whilst conducting business. Interviewees also stressed the importance **of central decisions** and **strong military hierarchy** for the overall organisation process, whilst simultaneously criticising the decentralisation of some administrative decisions. Conversely, different scholars, as discussed in Section 5.6.10 stressed the importance of decentralisation during a disaster. For instance, Kapucu and Garayev (2011) put emphasis on non-traditional approaches and tools characterised by non-hierarchical structures and flexibility in decision-making. Kapucu and Garayev (2011) stated that because of the ineffectiveness of the traditional disaster management tools, the traditional approaches characterised by hierarchy and centralisation have been replaced by decentralised emergency management systems. Nazarov (2011) and UNISDR and UNOCHA (2008) confirm this view, while Withanaarachchi and Setunge (2014) stressed that decision-making must be flexible during unexpected incidents. Interestingly, one of the twenty-eight interviewees supported the aforementioned view and talked about the lack of clear exceptional administrative powers during disasters at the various administrative levels; the document analysis showed similar findings (Committee 101, 2010).

Although the distribution of authority in the disaster response was often unclear and sometimes confusing (Uhr et al., 2008), based on interviewees opinion, **duties and responsibilities are known by all staff members**, despite some incorrect distribution of tasks. Moreover, as interviewees praised the idea of putting the right person in the right place, at the same time criticised inappropriate resource allocations that were made after 2003, regarding commissioning people with no experience for important administrative tasks. Such wrong allocations were conducted due to the control of political parties and blocks in giving managerial positions as discussed in Section 4.4.1.8.

Interviewees also put emphases on the **existence of the entire organisational structure** approved by the Ministry of Interior, but they at the same time criticised tow things regarding this matter. Firstly, the ill-considered decisions in terms of cancelling or merging branches within the organisational structure, which might lead to reduce the efficiency of work. Secondly, the long authorisation process for updating organisational structure. Unfortunately, the General Directorate of Civil Defence are still referring to the old official organisational structure from 2009 (as shown in Appendix J), which whilst it has been updated several times, it is yet to be authorised for use from the key official in the Ministry of Interior, due to correspondence delays and red tape.

5.4.7 Decision-Making

It is widely considered that decision-making and problem-solving are critically important skills in disaster management. Being able to make decisions and solve problems effectively is a necessary and vital part of the job for every disaster manager, planner, and first responder (FEMA, 2005). According to interviewees' opinion within the directing stage, although a failure in decision-making might happen due to different reasons as discussed in Section 5.2.9, they, at the same time, praised the existence of specific contexts to respond to the disaster and proper appreciation of the position. Meanwhile, having the ability to evolve, to urge staff, and to convince them, are also different positive features for disaster response decision-making in Iraq.

Apropos centralisation in decision-making, though the interviewees considered centralisation in decision-making is a positive point, much of the current literature on decision-making has stressed decentralisation in decision-making (see Section 5.4.6 and 5.6.10), such as Kapucu & Garayev (2011), Nazarov (2011), UNISDR and UNOCHA (2008), and Withanaarachchi and Setunge (2014). Questionnaire respondents further agree with interviewees' opinion as clearly

shown in Figure 4.33. There was a good implementation for the “Key officials being briefed” factor.

5.4.8 Morale Incentives

Given the nature of the work for employees in disaster situations, it is important that people feel valued and motivated to complete their work to the best of their ability. According to MSG Experts (2008), to motivate employees to greater action, there are two types of incentives, namely, monetary incentives (financial incentives) and non-monetary incentives (morale incentives). The latter one cannot be measured in terms of money. A manager makes use of morale incentives, whenever (s)he has to satisfy the psychological requirements of subordinates. Morale incentives can be categorised as providing security of service, giving praise or recognition, having suggestion schemes, ensuring job enrichment, and providing promotion opportunities. Based on interviewees’ opinion that emerged from the directing stage, responding correctly and quickly to the disaster, especially in major accidents, may result in the responder obtaining morale incentives from one of the key officials, for instance, heads of departments, general managers, the prime minister, and the minister. Normally, when receiving morale incentives from the minister or the prime minister, six months or a year is added for the years of service of staff members. Such an addition also gives a consequential financial reward. In comparison, and meanwhile, interviewees criticise the fact that morale incentives are obtained from heads of departments or general managers that have no financial benefit from them. Still, this kind of incentive can help maintain morale to disaster responders’ teams. MSG Experts (2008) support this positive point stating that a combination of financial and non-financial or morale incentives all help to bring motivation and enthusiasm to work in difficult situations.

5.4.9 Feedback

By **convening meetings after each large accident**, analysis of the process is conducted for the purpose of **determining weaknesses and strengths and obtaining feedback**. Such meetings, from interviewees’ opinion, were considered a positive point in the current disaster response practices, in terms of addressing the negative points when responding to such incidents. Interviewees, within the controlling stage, criticise the process of addressing negatives after the analysis of the incident, in terms of imposing punishments on staff that are not effective; rather, people need incentives and a focus on the positives rather than the negatives. Interviewees also praised other positives, including filming the scene in order to identify the cause of the accident and take advantage of it in the analysis process, as well as submitting reports for any accident.

Questionnaire respondents' answers support this view regarding the "clear procedure of reporting and submitting information" and an "effective damage reporting system" through the gap analysis that appears in Section 4.8.3.1 and Section 4.8.4.1.

5.5 Summary of the Strengths

Nine points of strengths have emerged from both primary and secondary data through conducting cross-analyses of the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling). The findings show that two points of strengths, namely, the endowment of equipment, tools and infrastructure and disaster response team characteristics were appeared in three different stages, while the rest of strength point appeared in only one stage. Interestingly in this section, some strengths were also discussed as being weaknesses, that is, the themes appeared in both sections. After discussing critically these important findings, the next section will present the recommendations that are suggested to enhance the disaster response process.

5.6 Recommendations for Disaster Response Management

The recommendations across the four stages of disaster response management are analysed in this section. The similarity and the differences of the recommendations across different stages are identified in Table 5.3.

Table 5.3 Recommendations for Disaster Response Management Stages

Stage / Recommendations	Planning stage	Organising stage	Directing stage	Controlling stage
Endowment of Equipment, Tools and Infrastructure	X	X	X	X
Education about Disaster Risk	X		X	X
Coordination		X	X	X
Specialist Staff	X	X		
Planning Process	X			
Financial Resources	X			
Law Activation	X			
Employees' Rights		X		
Attention for Obligations			X	
Decision-Making				X
Risk Assessment				X

5.6.1 Endowment of Equipment, Tools and Infrastructure

It could be argued that the capability of disaster responders' mobility could be enhanced by using sophisticated and reliable machines and equipment. It can be seen that this theme appeared in all stages of disaster response management. According to interviewees' points of view, by **using sophisticated equipment and machines** as well as **special heavy rescue equipment**, the response process might become faster and easier than before. In agreement, Goodyear (2009) stresses the need for robust technical and infrastructural abilities within the GoI and other disaster risk reduction participants is an imperative to plan for, mitigate and respond to future disasters in Iraq. Further, maintaining planning supplies was one of the interviewees' recommendations. Regarding **systems and networks**, interviewees recommended linking the directorates of civil defence with the **e-government network,** using a **GPS system** while responding to a disaster, as well as setting up **effective early warning systems**. This view was supported by Wehbe (2013), stating that the establishment of systems and networks of a regional early warning system for monitoring the multiple threats to the region is one of six recommendations within the second main theme of the Arab Strategy. Similarly, Terawi (2008) emphasised the need for an effective early warning system in organisations, in order to prevent crises before they occur and prepare to deal with the crises that cannot be avoided. Humayun and Al-Abyadh (2014) support this view and recommended investment in necessary technology and equipment, and building the technical capacity of organisations with early warning systems and information dissemination functions. Moreover, the majority of the interviewees stressed **setting up a fire nozzles and security cameras network** within the required technical specifications. In terms of civil defence centres, based on interviewees' opinions, the number of modern civil defence centres should be increased. Further, **the telecommunications and informatics in the provinces need to be developed**. Such improvement could be achieved by **equipping the province with modern and effective monitoring systems** and **linking the directorate with satellite systems and activate the subscription**. Besides that, by providing aircraft systems the control process might be facilitated. It could also be achieved by establishing well-designed communications and information infrastructure prior to the disaster, which is required to support organisational performance in a rapidly changing environment. Such establishment would contribute substantially to achieving disaster risk reduction goals by enabling communities to manage their own risk more efficiently and effectively (Comfort & Haase, 2006). According to Smirnov et al. (2007), the application of new technologies including context-aware interoperability of participants and operational decision support assistance are required for disaster response

operations. Moreover, the Urban Planning Department (2014) emphasised the need for completing the information base in the Iraqi General Directorate of Civil Defence by using GIS information systems and updating it annually, as well as keeping pace with the global progress in this service. GSMA (2012) on the other hand, suggested the idea of spreading early warning messages and vital information to citizens prior to and/or in the aftermath of a disaster. Such information spreading might be a crucial way in which they can help to support government agencies to enhance disaster responses.

5.6.2 Education about Disaster Risk

By providing a comprehensive education over different generations, skills and provisions for disaster preparedness and response can be developed in order to ensure community safety during a disaster. Goodyear (2009) stated that capacity development is a key component of strengthening community-level preparedness. This theme appeared in all stages of disaster response management, except the organising stage.

Within the context of **knowledge dissemination about risk management**, interviewees recommended that the public should be educated by increasing awareness of the risks through education in all its stages, continuous communication with the public, particularly media that are important in raising awareness about the role of civil defence. Abosuliman, Kumar, and Alam (2013) upheld this view stating that attention should be taken to community awareness and preparedness. The UNISDR (2015) gave another suggestion to educate the public; that is creating awareness programs geared to disaster risk reduction and mitigation. Davies (2005) supports this view stating that communities must be prepared at all levels to ensure an efficient and effective response to disaster situations. In addition, Wehbe (2013) pinpoints one of the five main themes of the Arab Strategy for Disaster Risk Reduction 2020, namely building confrontational ability through knowledge, public advocacy, research, and training. This main theme recommended six points as follows:

a. Work on the availability of risk and disaster events information at all levels and its accessibility by all parties concerned.
b. Ensure the use of educational materials and curricula and methodologies for the most recent level to take into account the contexts and realities of regional, national and local emerging risks.

c. Raising public awareness, launching campaigns and support activities to shed light on disaster risk reduction action, and disaster management practices with the participation of the community.
d. Creating regular opportunities for training and developing the skills of managers, decision-makers, and volunteers from the community besides ensuring women participate fully.
e. Ensure the flow of resources to support ongoing scientific research, which aims to find solutions that can be applied especially in the short and medium term.
f. Developing acceptable criteria and indicators to monitor the progress of risk reduction and clarify the benefits of investment in this area.

As far as staff education is concerned, interviewees suggested that **continuous training for staff** by **intensifying external and internal training courses in the field of planning** might lead to a more robust response to the disaster. Moreover, the intermediate and lower staff should be involved in such courses. In a similar way, Committee 101 (2010) recommended, shown in Table I.1, that more knowledge and skills of planning are required. Also shown in Table I.1, most of the Iraqi governorates recommended training and development, especially training for different kinds of disasters. Further, more capacity building is preferred. This suggestion was supported by the UNISDR (2015) stating that it was important to speed up building capacities and competencies for those working in the field of disaster risk reduction as well as involving all society segments in capacity building. The UNISDR and UNOCHA (2008) agree with the aforementioned view and added capacity development as a central strategy for reducing risk. Humayun and Al-Abyadh (2014) also support this view and recommended training to develop staff capacity for disaster management in executive authorities including the General Directorate of Civil Defence. However, Terawi (2008) pinpoints the need to focus on holding training programs and workshops in the field of service management for staff, training on how to look for warning signals, tracking and analysing them, and to take the necessary precautionary measures to prevent crises. In a similar way, Davies (2005) recommended that **education and training must be both theoretical and practical with an emphasis on the integration of the theory learned in practice through the use of simulation**. Abosuliman et al. (2013) agree with this view stating that responders should be continually trained with good practices and preparedness. Such training could be paramount to successful disaster prevention and management.

Based on interviewees' opinions, training and practices in decision-making as well as holding periodic seminars and meetings with all the officers to teach them how to deal with orders and instructions in order administrate the accident site. Goodyear (2009) upheld this view and added that by offering professional disaster management training to senior Government officials, disaster preparedness can be recognised as an active link between disaster response, rehabilitation and development programs. According to the Federal Emergency Management Agency (2015), when the officers include themselves in such exercises through clarifying their responsibilities and actions throughout the incident, including admitting to any tactical errors they may have made, the firefighters will more willingly admit their own or recognise errors by others, once they know the officer is willing to acknowledge a less-than-perfect performance. Additionally, corrective action should be undertaken to identify and correct problems, if operations failed to go as planned. Such corrective action may include increasing company-level training, arranging for remedial individual training or simply reviewing departmental policy and procedures with personnel (Federal Emergency Management Agency, 2015).

Interviewees also put emphasis on conducting **a comprehensive assessment of the risks, vulnerability, and the available capacity at all levels and by multi-regions**. In addition, **conducting joint exercises with the relevant organisations according to the plans** might facilitate the response process.

Regarding research and studies in the field of planning, interviewees suggested that studies and research should be conducted in the field of planning relying on previous experiences and global research.

In terms of community participation in responding to a disaster, according to the UNISDR and UNOCHA (2008), community participation are required to achieve effective disaster risk reduction. In different disaster management lifecycles, Jahangiri et al. (2011) also found that the community contribution is needed to achieve successful disaster management. Similarly, Helsloot and Ruitenberg (2004) concluded that citizens' preparation should be promoted by providing campaigns for specific incidents to let citizens prepare themselves for unusual accidents. Such preparation and education should include both males and females, because gender is a core factor in disaster risk reduction (UNISDR & UNOCHA, 2008).

5.6.3 Coordination

This theme appeared in all stages of disaster response management, except the planning stage. Interviewees emphasised the need for **central leadership with flexibility in decision-making** for all accidents while others stressed **showing interest in the organisation by the key officials and decision-makers**. Such interest might be conducted by **updating the organisational structure regularly** and eliminating favouritism and bias in the work. In the same way, Humayun and Al-Abyadh (2014) recommended that to obtain better alignment between some organisations and with ministries and institutions with similar jurisdictions and mandates, the administrative structure of them should be revised. According to Handmer and Parker (1991), by adapting the best structures, innovation and adaptive behaviour might be encouraged. By doing so, operational units can respond independently, without central control, which may not be available in any case. Conversely, the effect of the "bureaucratic imperative" might be reduced by adopting a looser structure. Because bureaucracies tend to apply strong central control, thus the initiative of operational sections will be constrained.

There is also an issue of trust between employees and their superiors, beyond the hierarchy structure. The stressful and potentially harmful environment provides no opportunity for a participatory approach, thus trust is necessary so that orders are obeyed unquestionably and compromising operation outcomes are minimised (Emanuele et al., 2009). Trim (2004) also argues that there is a need for trust among staff. "Whatever approach is used, it is necessary to establish trustworthy and respectful relationships that facilitate co-operation and communication between the parties involved" (Trim, 2004, p. 223). According to Krackhardt and Stern (1988), trust enhances cooperation. They claim that once trust has been lost, cooperation is diminished, and that cooperation without initial trust is very difficult to implement. **Creating a sense of trust among the different stakeholders, who are expected to work as a team**, is therefore, crucial.

Moreover, Chen, Sharman, Rao, et al. (2008) stressed **adopting new technology elements that have emerged in recent years to enable better emergency response coordination** such as wireless mesh networks (CalMesh; calmesh.calit2.net), sensor networks (ASPECT; www.epa.gov/naturalevents/flyinglab.htm), knowledge management systems (RKBP; www.rkb.mipt.org), geographic information systems (CATS; cats.saic.com), communication standards (CAP; www.incident.com/ cap), incident forecast and analysis programs (SLOSH; www.fema.gov/plan/prevent/nhp/slosh_link.shtm), peer-to-peer communication platforms (Microsoft Groove; www.groove.net), collaborative work systems (E-Team; www.eteam.com),

and command and control systems (DisasterLAN; www.disasterlan.com). Such technologies might address parts of the problem and have to be leveraged to improve coordination.

By establishing strong coordination mechanisms between different organisations at the time of disaster, the response process might become easier. To support a comprehensive program, a network should be developed by determining the other players in disaster response and preparedness. Not only that, the regional and governorate level of coordination for disaster preparedness, mitigation and response should be strengthened by vesting responsibility to a dedicated, professional disaster management entity that would report to the regional government/Governor at the regional/governorate levels (Goodyear, 2009). From the interviewees' point of view, **higher coordination with the relevant organisations** is very important especially with utility services organisation, security organisation in order to impose the security cordon properly and install and maintain a fire nozzles network as well as remove excesses on the national electricity grid system. Such coordination might mean **increasing the mobilisation speed of the various relevant agencies in various organisations by updating and testing of inter-institutional response**. **Providing the buildings with the coding system** is also one of the suggestions that might have an impact on reducing disaster response time. Moreover, by evacuating the streets from vehicles in case of emergency and removing stalls from roads that are forbidden such as the hard shoulder, the civil defence teams might reach the scene in a timely manner.

Wehbe (2013) suggests **strengthening cooperation between the Arab countries with respect to disaster response, preparedness, and recovery**. In addition, future attention has been suggested by Abosuliman et al. (2013) to the top five areas, namely, **identification and coordination of the organisational responsibilities**, training of response teams, community awareness and preparedness. Furthermore, **expertise connecting groups in institutions are needed** as well as the **adoption of new frameworks that promote coordination, flexibility, and rapid response** in order to achieve institutional development (Baker & Refsgaard, 2007). Besides that, the UNISDR and UNOCHA (2008) suggested that disaster risk reduction can be enhanced by using an important tool such as public-private partnerships.

The UNISDR and UNOCHA (2008) experiences have shown that a critical feature of an effective disaster preparedness capability is the extent to which different actors and entities operate in a coordinated and timely manner by avoiding gaps, duplication of effort, and parallel structures. Skilful coordination among the wide range of potential stakeholders that may

provide assistance during an emergency (such as the military, NGOs, utility companies and private sector entities) is critical to avoid confusion and to facilitate an effective response. Ensuring a clear central focal point and location for coordination, such as an Emergency Operations Centre is also essential.

5.6.4 Specialist Staff

It is widely agreed that team working can better be accomplished with the employment of as many competencies as possible (Emanuele et al., 2009). Besides that, Goodyear (2009) stated that skilled people in disaster management are required at all levels of preparedness and response with a clear understanding of their role within that system. According to interviewees' opinions, that emerged in the planning and the organising stages, **specialised technical staff in planning and organising should be increased** as well as relying on **competent and experienced people with academic achievement** to achieve staff integration within the standard staff that is approved by the key stakeholders. This point was confirmed by Desforges and Waeckerle (1991) stating that a key element in the success of a response is experience. This is because experienced and knowledgeable leaders make robust decisions when faced with difficult or unexpected problems. Chen et al. (2006) further recommended that the best way to address staff shortages in Taiwan is adjusting manpower from other agencies in the same governmental body.

5.6.5 Planning Process

It could be argued that disaster response planning is a responsibility at all levels of the organisation. Planning priorities might differ according to the context and scope of the situation whether local, national or regional. It is essential to work on response plans in consultation and cooperation with those who will have to implement or approve them (International Federation of Red Cross and Red Crescent Societies, 2007). Based on interviewees' opinions, within the planning stage, **attention and support for the planning process should be given by the decision-makers** in the directorate. Perry and Lindell (2003) confirm this suggestion indicating that sustaining attention should be given to disaster planning, especially in Middle Eastern countries, due to continuing terrorist attacks worldwide. In agreement, Desforges and Waeckerle (1991) stress that proper planning and preparation enable the community to deal better with destruction and death in the wake of disasters. Terawi (2008) confirms this point, stating that work should be undertaken to make the crisis planning process an important and essential part of the strategic planning process, and the major element of the organisational general plan. Moreover, according to interviewees' opinions, **planners should focus on**

disaster forecasting and monitoring as well as **prior plans preparation to any types of disaster**. Similarly, Barbarosoğlu and Arda (2004) suggested that response planners should be proactively prepared for an effective response and should possess robust and generic decision tools and models to improve their disaster relief and response capability. Further, the UNISDR (2015) propose **developing mechanisms, procedures, and systems to save and disseminate data concerning hazard and recovery**. According to the UNISDR and UNOCHA (2008), by adapting a multi-hazard approach, effectiveness can be improved.

Regarding the **planning feedback process**, in order to address the negatives occurring after each accident, **regular meetings with all the officers and staff members should be conducted**. In agreement, Perry and Lindell (2003) suggested that critiques of the plan are probably one way to resolve the problems of the disaster planning process. This recommendation was also supported by Terawi (2008) who sees this from the operative point of view, the need to adopt a **periodic review system of disaster management plans** and test them in conditions similar to the actual situations of crisis and work to improve them, thus people get used to working under stress and strain in the event of a real crisis in this field.

However, **developing a unified plan to respond to the disaster** was a good recommendation from interviewees due to their emphasis on different aspects in terms of coordination between the authorities and the rest of the relevant organisations, ensuring road opening for civil defence teams, to **apply and update safety standards for buildings**, and **study any decision or law to be issued**. Humayun and Al-Abyadh (2014) support this recommendation, stating that an effective and efficient response to disasters requires a national perspective. Further, all agencies should be included in planning to achieve integration in planning. Therefore, preparation for organisations' response should be conducted by disaster planning to deal cooperatively with situations full of chaos and uncertainty. Consequently, based on Prideaux (2004), a well-planned disaster response mechanism is needed in many countries, and some including Australia, have yet to develop appropriate response mechanisms for their tourism industries. Chen et al. (2006) further stressed that the establishment of the mandated requirements should be coupled with technical and financial assistance from the central government as well as professional groups because Taiwan is a centralised state. According to Handmer and Parker (1991), individuals and organisations should be capable of working efficiently without the normal energy, communications and transport infrastructures, as these may not be operating after a harsh event. Human resources, emerging from the community and other organisations, should also be coordinated.

However, the UNISDR (2015) suggest finding newly obliged legislation to prepare plans and programs to reduce the potential for disaster risk as well as finding appropriate work environments for staff. Handmer and Parker (1991) raised a new important point in terms of roles and responsibilities, stating that unambiguous roles and responsibilities should be determined within the disaster planning structure.

Further, Baker and Refsgaard (2007, p. 331) proposed a general strategy of adaptive management as follows: "emphasise the importance of participatory planning with institutional actors where both initial response organisations, as well as institutions involved in longer term recovery, are involved in emergency response exercises". Whereas, Hale et al. (2005, p. 131) suggested in their findings "an organisation's crisis response communication plan should structure and coordinate the separate but interdependent steps of observation, interpretation, choice, and dissemination". In addition, to ensure the appropriate response across the service spectrum, including voluntary organisations, planning must be taken in order to obtain a forthcoming optimum response to a disaster situation. Moreover, **the availability of expertise must be taken into account when planning and preparing for a disaster** in order that the most effective response can be made to the challenges that will inevitably emerge in a disaster (Davies, 2005). Baker and Refsgaard (2007) on the other hand, put emphasis on **developing the plans, that operate horizontally and across scales, by practising, evaluating, and re-planning the plans** in order to develop appropriately matched institutional responses and be able to determine the scale of the disaster. To ensure plans have been developed, gaps should also be defined in the national, governorate and community level preparedness plans advocating with policy makers to reduce the impact of disaster incidents on vulnerable communities (Goodyear, 2009). Moreover, to invest senior managers' time, a strategic and critical group planning process could be enhanced by using group support technology/electronic meeting rooms (Money & Harrald, 1995). Handmer and Parker (1991, p. 306) went on to add a suggestion related to "planning should be "reality based", grounded in what is likely to happen rather than on myths and misconceptions long overturned by disaster research". Besides that, many of the personal contacts that are generally necessary for effective response should be established by those who are involved in the planning process. They should also have thought carefully about the involvement and likely behaviour of those at risk, the mass media, and the rest of the world.

5.6.6 Financial Resources

Interviewees, within the planning stage, were of the opinion that in order to implement the plan properly, adequate financial resources should be allocated. Resources allocated should depend on accurate estimations. In a similar way, the Planning Department (2015) suggest three recommendations as follows:

a. Necessary funds should be allocated to provide financial resources.
b. Provide financial resources necessary for the implementation of a risk reduction program which seeks to guarantee disaster mitigation.
c. Propose determining the amount of emergency funds that can be easily disseminated in emergency situations.

Similarly, Wehbe (2013) stressed ensuring the availability of regional, national and local financial reserves and applying precautionary mechanisms that are known to all concerned parties to ensure an effective response and recovery when needed. Moreover, analysing the existing and emerging financial mechanisms for disaster risk reduction as well as identifying and developing the most efficient means to risk transfer and to fund it. Moreover, Humayun and Al-Abyadh (2014) recommended increasing the contingency reserve appropriations to 10% of the federal budget. Unused allocations may be rolled over to subsequent years in order to build up a reserve fund for a response to large-scale disasters.

5.6.7 Law Activation

The Civil Defence Law 1978 was approved to provide clear relief and response mechanisms for addressing hazards. Thus, interviewees, within the planning stage, are of the opinion of **activating the decisions of the civil defence services under Law No. 64 of 1978 amended by Act 44 of 2013**. In addition to this issue, Goodyear (2009) stressed that a structured and strategic agency responsible for policy formation, information sharing and the formulation of disaster management capacities in terms of early warning, preparedness, mitigation, relief, rehabilitation and recovery activities at the provincial and district level is essential and severely needed in Iraq.

5.6.8 Employees' Rights

The adoption of competence, experience, and personal preference for the field of work is one of the interviewees' suggestions in accordance with the importance of **staff wishes to work within a certain department**. This theme emerged in the organising stage. Moreover, the interviewees proposed **going back to the previous system of daily working hours for civil defence centres - 24 hours on and 48 hours off**. Several interviewees pointed out the **staff**

rights to have their vacation outside Iraq, vacations to complement their studies, and health insurance in the Iraqi Acts and recommended **activating certain paragraphs of these laws**. Besides that, the problem of employees who are unfit to work is taken in interviewees' consideration when they recommended to **replace them by recruiting new employees with experience** and transferring them to the Social Welfare organisation or to the morning shifts as administrators in civil defence centres.

5.6.9 Attention for Obligations

It is a widely held view that disaster response rules and principles should be given good attention in order to reduce human vulnerability. Various aspects regarding disaster response might be addressed by using such rules. Interviewees, within the directing stage, are of the opinion that there should be an adoption of **the orders and instructions contained within the operations leadership curricula of the fire, rescue, and safety**. Such adoption might be achieved by conducting a **daily inspection of the work requirements**. According to Handmer and Parker (1991), **operational groups should contribute in developing general policies and guidelines** which help to ensure that their actions contribute to disaster response priorities.

5.6.10 Decision-Making

Poor disaster management might be due to poor decision making. Therefore, efficient and effective decision-making needs to be investigated and understood, learned, practised, and effectively executed during the response (Sinclair et al., 2012). In addition, decision making must be flexible, responsive, and capable of reacting to the unexpected in a timely and effective manner. To do so, people in responsible places must carry out their duties or should get the required guidance and training (Withanaarachchi & Setunge, 2014). To enhance the response process, interviewees, within the controlling stage, recommended having **central leadership with flexibility in decision-making** for all incidents, however, Kapucu and Garayev (2011) put emphasis on a non-traditional approach and tools characterised by **non-hierarchical structure and flexibility in decision-making**. Kapucu and Garayev (2011) stated that because of the ineffectiveness of the traditional disaster management tools, the traditional approaches characterised by hierarchy and centralisation have been replaced by **decentralised emergency management systems**. Similarly, in Japan, the disaster management system is decentralised because decentralisation enables more government agencies to be involved in disaster management, although to various extents and bearing various responsibilities. By doing so, the overall disaster management system might be enhanced by fostering development disaster coping capability of each body or region individually (Nazarov, 2011). In a similar way, the

UNISDR and UNOCHA (2008) suggested that to implement the Hyogo Framework, responsibility should be decentralised for disaster risk reduction. Clearly, the literature and the primary data findings are in conflict here, the literature recommending decentralisation in disaster management, yet the interviewees in the Iraqi context felt that it was more important to have a centralised decision-making structure with some flexibility. Since this thesis focuses on the Iraqi context, centralisation with some flexibility is taken in the final recommendations made.

Furthermore, interviewees recommended **assessing the situation accurately to stop the improvisational behaviours**. Based on Desforges and Waeckerle (1991), such an assessment should be taken by the most experienced senior person who takes charge of the scene to conduct an immediate survey of the area, the number of victims, and their injuries. While other interviewees put emphasis on the staff having input into decision making in terms of moving staff as required. Moreover, **new control techniques that adapt the principle of reward, more than the principle of punishment, might be needed to raise and sustain morale**. In agreement, the Federal Emergency Management Agency (2015) stressed that during the corrective action, a learning exercise should be considered by officers, if operations failed to go as planned. To do so, success or corrective action should be acknowledged, and similarly, mistakes should be learnt from and prevented from being made in the future, not to publicly embarrass those responsible for making them. Helsloot and Ruitenberg (2004) shed light on the importance of the correct information in decision making, stating that "in all phases of a disaster or serious accident, it is necessary for all those involved (citizens and government alike) to **make decisions based on the most correct information**". Similarly, **developing information and decision management competencies and procedures** are probably needed to increase the effectiveness of the disaster response (Sinclair et al., 2012). Moreover, to achieve a balance between top-down and bottom-up influences, the versatility within the system must be known by decision makers at a high system level (Uhr et al., 2008). In addition to this issue, the capacity of practising managers should be updated and upgraded. Such capacity requires a continuing commitment from them to function in their specific areas of responsibility, while simultaneously adjusting their performance to the constraints and resources available in neighbouring jurisdictions (Comfort & Haase, 2006). In a similar way, the Federal Emergency Management Agency (2015), clarify the importance of immersing officers in corrective action exercises. The officers in such exercises can explain their responsibilities and actions during the incident, including admitting any tactical mistakes they may have made.

5.6.11 Risk Assessment

To identify and assess the likelihood and consequences of potentially disastrous events, risk assessment is needed to provide information about the most important threats society faces and thereby contribute to a culture of risk amongst communities and individuals. Interviewees, within the controlling stage, assert that **identifying, assessing, and monitoring all types of disaster risks is important, and the priority of these risks according to its geographical distribution**. Wehbe (2013) supported this suggestion and recommended **ensuring the availability of multiple risk assessments of national and local damage**. Such risk assessments include key sectors with a focus on urban centres or settlements. Wehbe (2013) further recommended ensuring the existence of necessary institutional capacity to conduct an assessment of damage and losses. In agreement, Goodyear (2009), in his conclusions, asserts that to save lives and protect assets and resources before they are lost, greater attention should be paid to preventive strategies. Such tasks might require analysing different activities continuously, such as evaluating the capacity of key stakeholders and the most vulnerable groups to respond to threats/disasters at the time of local or national disasters, identifying hazards, describing, listing, and mapping of key hazards, and evaluating the geographical distribution of threats. However, Baker and Refsgaard (2007) put emphasis on determining the scale of the size of the disaster, to develop a response strategy and implement the plan by the institutions that are operating in the disaster response arena.

5.7 Summary of the Recommendations

In brief, sets of recommendations have emerged from both primary data and secondary data. Appendix L shows the first draft of these recommendations. The recommendation for the endowment of equipment, tools and infrastructure was present in all disaster response management stages, while recommendations for education about disaster risk and coordination were made in three of these stages. However, themes related to having specialist staff appeared in two different stages. The rest of the suggestions were only present in one stage.

Interestingly, the literature and the primary data findings were found to be in conflict, the interviewees felt that centralisation was a key point, but with some flexibility, yet the literature has consistently suggested that decentralisation is preferable in achieving better disaster management. Since this thesis focuses on the Iraqi context, centralisation with some flexibility is taken in the final recommendations made.

After completing the validation process, which is illustrated in the next section, the final sets of recommendations or themes will be finalised, after the refinement process.

5.8 Validation

Based on the primary data obtained from the semi-structured interview responses, the questionnaire, and the document analysis, as well as the secondary data that was compared and discussed in detail within the context of the research themes (see Section 5.6), sets of recommendations were suggested that enhance the current disaster response practices, in order to enhance the overall process to effectively respond to disaster (See Appendix L).

With the intention of verifying and validating the recommendations, three executives responsible for disaster response in the main administration (purposely selected) from the Iraqi General Directorate of Civil Defence were invited to participate in semi-structured interviews.

These groups of recommendations were examined in terms of appropriateness of the recommendation and whether they were classified appropriately under the different research themes.

After giving the invitation letter (see Appendix K) and receiving participation agreement, the validity interviews were conducted with three experts involved with disaster response teams and who showed interest during the data collection stages for further support. The interviews with these experts were conducted in Arabic. Thus, their responses required translation after finishing the transcribing process.

The validation interviews were executed at a suitable time for each interviewee. It took between 30 to 35 minutes, where feedback was taken at the same time. Before starting the interviews, the interviewees were briefed on the current status of the case study in relation to the current disaster response practices, by presenting the findings in terms of recommendations to enhance the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling). Accordingly, these sets of recommendations were presented.

5.8.1 Refinement of the Recommendations

In the previous section, the validation process of the recommendations was discussed and presented. To refine the recommendations, the interviewees were questioned about the appropriateness of the recommendation, and to check whether they were classified appropriately under the different research themes.

A positive response was obtained combined with some amendments that were suggested to refine the recommendations related to the endowment of equipment, tools, and infrastructure, coordination, the planning process, employees' rights, financial resources, and law activation. All the interviewees were satisfied with the classification under the different research themes. Feedback was received from three experts in order to reshape the draft of the recommendations, and the final sets of recommendations were finalised after this validation process. The final recommendations, after validation, are shown below.

5.9 Final Recommendations

It can be seen from the recommendations below that few comments from experts suggested any improvements or changes; in fact, the experts felt that this was a true representation of the context of Iraq, thus the recommendations were clear and realistic, for the Iraqi context. This is an important point because there are different views expressed in the primary and the secondary data. For example, the experts suggested centralisation with some flexibility in decision making, and this has been adopted in the final recommendations. Where there were suggestions made, these have been incorporated and the recommendations modified to become the final recommendations as shown below. The following, therefore, are grouped into themes, for each of the final recommendations, and these are underlined below.

5.9.1 Endowment of Equipment, Tools, and Infrastructure

- More use of sophisticated equipment and machines, including special heavy rescue equipment to enable the response process to become faster and easier.
- To link the directorates of civil defence with the e-government network for effective collaboration.
- To set up effective early warning systems (or critical incident management) <u>for all districts and towns</u>, in order to prevent crises before they occur and to get prepared to deal with inevitable crises.

- To set up fire nozzles and security camera networks adhering to the required technical specifications by stakeholders or the authorities concerned.
- To develop telecommunications and informatics in Baghdad and the Iraqi provinces.
- To increase the number of modern civil defence centres, especially in areas with high population increase.
- To complete the database in the Iraqi General Directorate of Civil Defence by using the most up to date and globally progressive GIS information systems.
- To use the mobile network to spread early warning messages and vital information to citizens prior to a disaster and/or aftermath of a disaster.
- To invest in necessary technology and equipment, and build the technical capacity of organisations with early warning system and information dissemination functions.

5.9.2 Education about Disaster Risk

- To provide continuous training for staff, of all levels, by intensifying external and internal training courses in the field of disaster response.
- To reactivate some sections of civil defence Law No. 44 of 2013 to facilitate teaching civil defence in the curriculum.
- To provide education at all stages (primary, secondary, higher) to increase knowledge and awareness of disaster risks.
- To educate the public through continuous communication, particularly through the media, to raise awareness about the role of civil defence in terms of disaster response.
- To conduct joint exercises such as multifunctional exercises with the relevant organisations according to the emergency response plans.
- To incorporate previous experience and global research on disasters when devising the response plan.
- To conduct training and practices in decision-making.
- To conduct a comprehensive risk assessment, to include vulnerability and available capacity at all levels and by multi-region.
- Education and training must be both theoretical and practical with an emphasis on the integration of the theory learned into practice through the use of simulation.
- To improve the value of citizen response by preparing citizens for specific incidents triggered by terrorism through the provision of regular training, campaigns and skill development programmes.

- To emphasise inclusivity, especially of gender, when providing education.
- To enhance trust among the people towards the disaster responders.

5.9.3 Coordination

- To update the organisational structure of the Iraqi General Directorate of Civil Defence regularly according to the current situation requirements.
- To eliminate favouritism, nepotism and bias in work environments.
- To increase the mobilisation speed of the various relevant agencies in various organisations by updating and testing of inter-institutional response.
- To provide buildings with a specific location address such as a postcode by the authorities concerned.
- To strengthen cooperation between Iraq and the surrounding countries with respect to disaster response, preparedness, and recovery.
- To develop a response strategy and implement institutional plans in disaster response organisations.
- To adapt new technologies that have emerged in recent years to enable better emergency response coordination, such as wireless mesh networks (CalMesh), sensor networks (ASPECT), knowledge management systems (RKBP), geographic information systems (CATS), communication standards (CAP), incident forecast and analysis programs (SLOSH), peer-to-peer communication platforms (Microsoft Groove), collaborative work systems (E-Team), and command and control systems (DisasterLAN).
- Attention should be given to identify and coordinate organisational responsibilities.
- To obtain disaster response expertise connecting groups in institutions.
- To adopt new frameworks in disaster response that promote coordination, flexibility, and rapid response in order to achieve institutional development.
- To create a sense of trust among the different stakeholders who are expected to work as a team.

5.9.4 Planning Process

- The staff at all levels and disciplines should be heard, consulted and cooperated with when making decisions about the response planning process.
- To focus on disaster forecasting and monitoring.

- To prepare additional plans for different or unusual types of disaster.
- To conduct regular meetings with all the officers and staff members to improve the planning process based on their feedback and experience.
- To develop mechanisms, procedures, and systems to save and disseminate data concerned with hazard and recovery.
- To introduce legislation to prepare plans and programs to reduce the potential for disaster risk, as well as find appropriate work environments for staff.
- The availability of expertise must be taken into account when planning and preparing for a disaster.
- To adopt a periodic review system of disaster management plans and test them in conditions similar to the actual situations of disaster and work to confront them.
- To develop the plans by practising, evaluating, and re-planning the plans in order to develop appropriately matched institutional responses and be able to determine the scale of the disaster.
- Planning should be "reality based", grounded in what is likely to happen rather than on myths and misconceptions long overturned by disaster research.
- Unambiguous roles and responsibilities should be determined within disaster planning structures.

5.9.5 Specialist Staff

- To increase the number of specialised technical staff with competence and experience, together with academic qualifications.

5.9.6 Employees' Rights

- To employ motivated, competent and experienced staff in disaster response management.
- To return to the previous system of daily working hours for civil defence centres - 24 hours on and 48 hours off.
- To improve the approval process to enable staff to complete their education and to have their vacation outside Iraq.
- To provide health insurance for staff.
- To conduct periodic medical examinations.

- To replace employees who are unfit to work, by transferring them to the Social Welfare organisation ~~or to the morning shift as administrators in civil defence centres~~. These staff could be replaced through the recruitment of new staff.

5.9.7 Financial Resources

- To allocate budgets based on appropriate estimations.
- To improve the mechanism to mobilise funds to the necessary departments on time.
- To make the availability of funds flexible depending on each emergency requirement.
- To make funding authorisation process more flexible through the removal of 'red tape'.
- To reduce the number of committees in the budget approval and authorisation process.
- To ensure the availability of regional, national and local financial reserves and apply precautionary mechanisms that are known to all concerned parties.
- ~~To analyse the existing and emerging financial mechanisms for disaster risk reduction~~.
- To increase the contingency reserve appropriations to 10% of the federal budget. Unused allocations could be rolled over to subsequent years in order to build up a reserve fund for response to large-scale disasters.

5.9.8 Attention for Obligations

- Attention should be given to disaster response rules and principles.
- To conduct daily inspection of the work requirements.
- Operational groups should contribute in developing general policies and guidelines.

5.9.9 Decision-Making

- To provide central leadership with flexibility in decision-making.
- To assess situations accurately and stop the improvisational behaviour.
- New control techniques that adapt the principle of reward more than the principle of punishment might be needed to raise and sustain morale.
- Efficient and effective decision-making needs to be investigated and understood, learned, practised, and effectively executed during the response.
- To develop information and decision management competencies and procedures.
- System versatility must be understood by decision makers at a high system level.

5.9.10 Law Activation

- To activate all the decisions of the civil defence services under Law No. ~~64 of 1978 amended by Act~~ 44 of 2013.
- To improve clarity and transparency in the mechanisms of the declaration of an emergency.
- To produce a unified national legal framework for disaster risk reduction and response.
- To update the structure of the ministries to reflect the laws and regulations of disaster management.

5.9.11 Risk Assessment

- To identify, assess, and monitor all types of disaster risks, the priority of these risks according to its geographical distribution.
- To ensure the availability of multiple risk assessments of national and local damage in areas including key sectors with a focus on urban centres or settlements.
- To ensure the existence of necessary institutional capacity to conduct an assessment of damage and loss.
- To determine the scale and size of the disaster.

Having represented the final modified recommendations, which were grouped under eleven different themes, these are presented in Figure 5.2 below. This is a PEST analysis diagram, which is a business tool to classify different factors, which influence a phenomenon such as a disaster response management, into political, economic, sociocultural and technological factors.

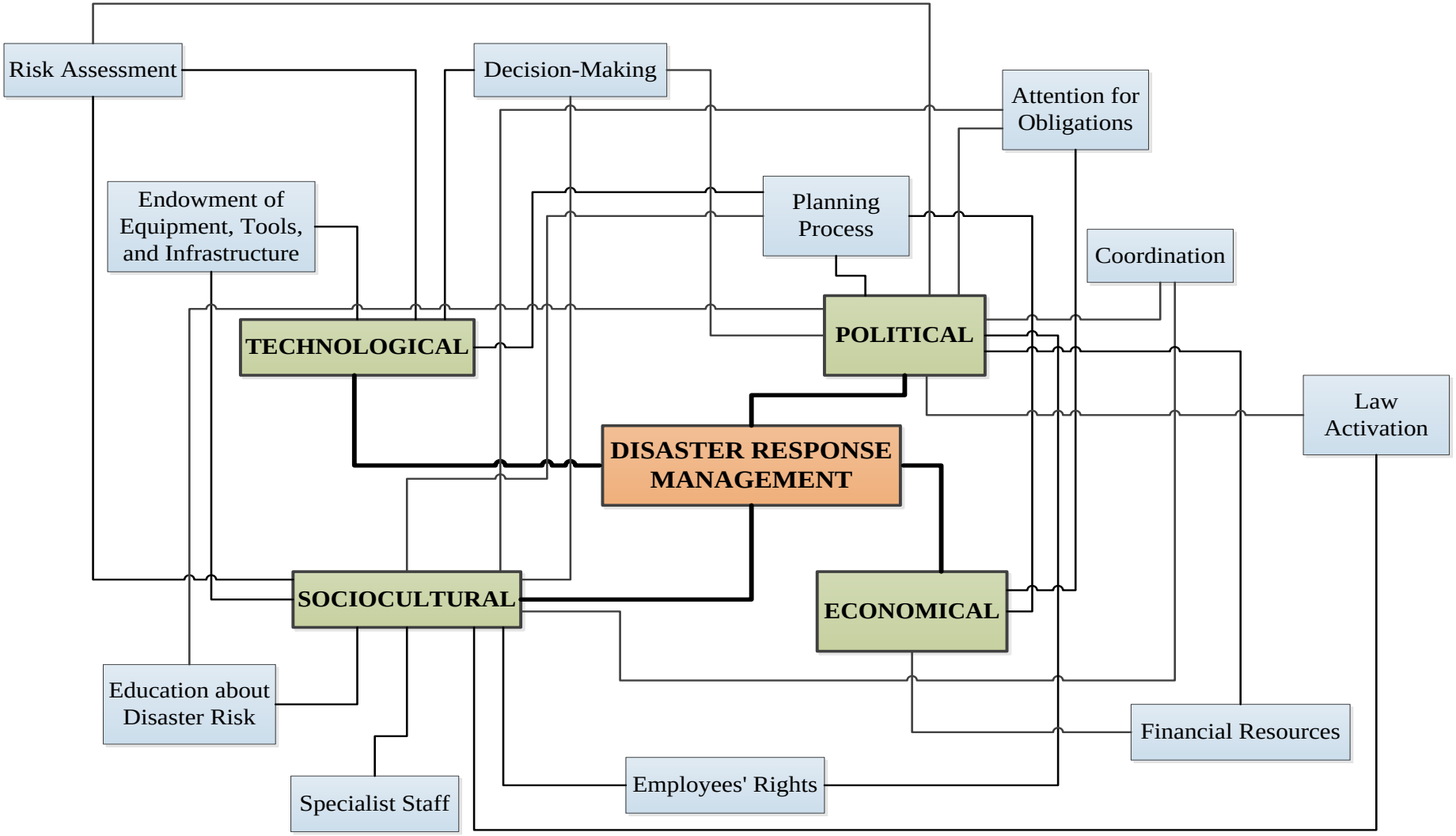


Figure 5.2 Classification of Study Recommendations into PEST Factors

5.10 Chapter Summary

This chapter has discussed the data analysis and findings of the single case study. The findings, which emerged from the primary data analysis of the three methods presented in the previous chapter (disaster response expert interviews, questionnaire survey, and document analysis) were discussed, in conjunction with the data obtained from previous scholars in the secondary data. Different sub-themes have been presented and discussed in the context of the main themes: weaknesses, strengths, and recommendations, within the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling) through conducting a cross analysis approach between these stages. The majority of the sub-themes are extracted from the interview data. Therefore, the organisation of the structure of the findings is similar to the interview themes and sub-themes discussed in Chapter 4.

Apropos weaknesses, twenty-six points of weakness were identified. Two of these weaknesses emerged in all four stages of disaster response management, namely, coordination between organisations and commanding the scene and endowment of equipment, tools, and infrastructure; whereas nine points of weakness appeared in two different stages. The rest of the weaknesses appeared in only one stage. The majority of these points emerged from both primary and secondary data. Notably, eight themes emerged from only the primary data, such as the difficulties in reaching the disaster scene, the security situation, unplanned random development, misuse of machinery, equipment and materials, employees' rights, staff movement and reduction of sections, frequent blackouts of the National Electricity, and morale and financial incentives. Only one theme, that of trust, emerged in the secondary data, yet did not appear in the primary data. Interestingly, the weaknesses determined either stem from external challenges or are present within the internal disaster response management system. Citizens' irresponsible interventions, the security situation itself, coordination between organisations, and unplanned random developments are some of the weaknesses that were recognised as external challenges. Besides the external challenges, some of the internal weaknesses were the lack of staff education, financial resources in the administration, the planning process and supporting documentation available.

Despite the aforementioned weaknesses, a number of strengths were elicited from the cross analysis within the case study. An important finding, within this section, is that some strengths were also discussed as being weaknesses; that is, the themes appeared in both sections. Moreover, to complete the evaluation to the current disaster response practices, sets of recommendations were suggested, to enhance the overall process to effectively respond to a

disaster. Through conducting validity interviews with three disaster response experts, in order to verify and validate these recommendations, the suggested refinements for the recommendations were incorporated into the final recommendations. There was general agreement between the primary and secondary data findings, however, there was one point that differed: the centralisation (primary) or decentralisation (literature) in decision making. The last section of this chapter presented the refinement process and showed the final recommendations.

This chapter has illustrated the findings of the single case study. The succeeding chapter draws up conclusions by linking the objectives of the study with the overall research findings from the primary and secondary data.

CHAPTER 6 CONCLUSION

6.1 Introduction

After presenting the data analysis of the single case study for each of the interviews, questionnaire survey, and document analysis in Chapter 4, Chapter 5 included a combined approach, between interviewee opinions and the key issues derived from literature, by using cross analysis. By using such an approach, weaknesses, strengths, and recommendations within the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling) were discussed. In this concluding chapter, the results of the overall study will be summarised to identify the main conclusions and recommendations of this research. Accordingly, the structure of this chapter is as follows: Firstly, the achievement of each objective of the study is discussed. Secondly, theoretical and practical implications are given. Thirdly, the limitations of the study are presented. Finally, further research areas are suggested.

6.2 Synthesis on the Objectives of the Study

As presented in Chapter 1, this study aimed to evaluate and make recommendations to disaster response management in Iraq with particular reference to terrorism, because this area of study is important and the gap emerged from the literature review on the paucity of studies carried out (see Section 1.2). To meet the aim of this research, sets of objectives and research questions were developed. Five research objectives and five research questions have been examined to achieve the aim of this study (see Section 1.3). Through obtaining four types of input, namely the literature review, the semi-structured interviews, the questionnaire survey, and the document analysis, these five research objectives were achieved. The sections that follow will summarise and present the key findings related to each research objective of the study.

6.3 Objective 1: Critically Review the Significance and the Challenges of Disaster Management in General and the Disaster Response Management Stage in Particular.

This objective has been achieved by reviewing the literature in both languages (English and Arabic). The importance of reviewing the Arabic literature is to identify the related terminologies and how those terminologies were used and adopted in the Arabic literature.

Various academic papers, articles, professional blogs and experts' websites, books were reviewed.

It is widely acknowledged that disaster management is a very complex, difficult, and dangerous activity (see Section 2.7). Disaster management aims to reduce the likelihood of a major incident or disaster occurring, so that the consequences of these incidents will minimise when they occur. Accordingly, disaster management aims to be proactive. To conduct proper disaster management, the sequence of activities that are logical, integrated and progressive should be acted as a cycle called the Disaster Management Cycle (see Section 2.7.1). There are different phases of this cycle, such as response, reconstruction, mitigation, and preparedness. Different scholars use the same concepts for these phases but in different terms. One of the most critical phases of the Disaster Management life cycle is the response phase, identified in disaster research literature (see Section 2.8). The complexity of the disaster response mission, in some cases, will be increased due to the high volume of potential casualties as well as the urgency of a fast response. In addition, as delays of minutes can cost lives and property, and because the impact of disaster on affected victims will be decreased by conducting an efficient response, there are critical needs for developing an effective and efficient disaster response strategy and rapid deployment of resources (e.g. medical resources, food, clothing, shelter, etc.) whenever disasters strike. Therefore, such critical need creates an economically costly and complex planning paradigm. Further, since disaster demands critical decisions that must be made in difficult circumstances, it was considered that responding to a disaster is a serious challenge. Because of the immediate risk of significant loss, stress, and time pressure, disaster response presents a unique environment. This environment is constantly changing, and the response activities during a disaster must operate in this environment. Therefore, if the disaster has caused large amounts of damage over a wide area with numerous unforeseen events, mounting a rapid and accurate response is difficult. Accordingly, to operate response activities in a constantly changing environment calls for a distinct research effort. In particular, since 9/11, there have been significant efforts to suggest improvements in the ability to respond to disasters.

Moreover, many challenges facing disaster response management in different aspects and in various countries have emerged and been discussed by reviewing the literature, as shown in Section 2.9. These challenges have been categorised into challenges during the planning, organising, directing, and controlling phases. By doing so, elements of good practice in disaster response management have been extracted (see Appendix B) and categorised into four disaster response management stages (see Appendix C).

As previously stated, Disaster Management has four stages, namely, response, reconstruction, mitigation, and preparedness. One of the most critical phases of the Disaster Management Life Cycle is the response phase, as delays of minutes can cost lives and property. Further, Disaster Response Management (in all four stages) faces various challenges and obstacles from different aspects and in various countries.

6.4 Objective 2: Evaluate and Synthesise the Current Status of Disaster Response Management Stemming from Terrorism in Iraq.

The literature review demonstrated that extensive research has been carried out on disaster management but none of them has been created to adequately cover the problem of disaster response management in Iraq. In terms of Iraqi contexts, only three studies, which focussed on disaster management in Iraq have been found and reviewed (see Section 2.13.1). Two of these studies have focused on human-made calamities such as conflicts, terrorism, and industrial hazards because of the longstanding conflict and wars in Iraq.

Responses to catastrophic events, in Iraq, depend on the assets and manpower of the central and provincial government and with assistance from non-governmental agencies and international donors. The Iraqi disaster response management has a number of issues, which hinder its success. The post-war transitions in Iraq have affected the institutional capacities of the state to respond in an efficient manner. Furthermore, it appears that the lack of a national platform to organise the efforts of multiple institutions at all tiers of government have serious limitations for the current institutional and legislative systems for DRR. Moreover, no rigorous effort has been made to institute a comprehensive disaster risk management framework due to a lower frequency of natural disasters in recent years. In addition to that, there are a number of laws, which were enacted prior to 2003 and are directly related to DRM/R such as the Emergency Use Law 1969, Civil Defence Law 1978 and Public Health Law 1981. Nevertheless, these laws have yet to be synchronised with the emerging legal and institutional arrangements in post-2005 Iraq. Such laws do not take account of disaster contingency planning. This means that the development of institutional and legislative systems for DRR has a reactive approach. Literature revealed that the primary constraints that impede the disaster response capacity of civil services institutions are inadequate fiscal resources and manpower as well as a reservation to align themselves with government systems. Besides that, Iraq's institutional disaster management ability is restricted, both on the national and subnational fields. Further, there is a lack of comprehensive and coordinated disaster management system of risk management in Iraq.

Literature suggested that the social work play a key overall role in responding to strategies that create a disaster, and in avoiding human-made disaster. Moreover, the social development strategies and human rights principles should be promoted by professionals through political practice and within social work education to face human-made disasters.

To conclude, Iraq and the Middle Eastern region of the world do not receive adequate coverage in the disaster literature. Moreover, there is a dearth of research on the impact the current disaster response status in Iraq has had in addressing the problems, as very little empirical data is available in this context. In addition, disaster risk reduction (DRR) in Iraq requires effective disaster preparedness and response mechanisms, people-centered early warning systems, responsible enforcement of policies and legislation, careful development planning, scientific knowledge, public understanding, and political and legal commitment.

6.5 Objective 3: Critically Evaluate the Weaknesses in the Disaster Response Management Stage with Particular Reference to Iraq.

By obtaining the theoretical understanding from completing the first and second objective, the researcher invests it in designing both of the semi-structured interviews and the questionnaire survey in order to achieve the third, fourth, and fifth objective. By participating in different conferences with theory-based papers (see Appendix A), the researcher was helped to bring to light her theoretical knowledge and to draw the route towards the empirical phase of this study.

To conduct a proper evaluation of the current disaster response practices, a comprehensive literature review was conducted. By reviewing a large amount of literature from overall the world, a number of good practices for disaster response management were identified (see Appendix B). To evaluate each stage of the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling), the identified elements were categorised by these management stages (see Appendix C). By doing so, the questionnaire survey design was obtained (see Appendix E). Such questionnaire intends to capture the difference between the levels of importance and implementation of the elements of good practice disaster response management, and to identify the overall gaps in every stage of disaster response management in Iraq.

To meet this objective, the data were collected from both primary and secondary data. Apropos primary data, the semi-structured interviews, the questionnaire survey, and the document analysis were conducted to provide insight into the dynamic nature of the Iraqi civil defence

response to acts of terrorism and large-scale destruction. A single holistic case study approach was adopted with these three different data collection techniques. Such triangulation in data collection enhances the possibility of obtaining rich and comprehensive data. The research presented data from the Iraqi General Directorate of Civil Defence.

According to the findings of this study, twenty-six weaknesses emerged from both primary and secondary data (see Section 5.2). Two of these weaknesses appeared in all four stages of disaster response management, namely, coordination between organisations and commanding the scene and endowment of equipment, tools, and infrastructure; whereas nine points of weakness appeared in two different stages. The rest of the weaknesses appeared in only one stage. The majority of these points emerged from both primary and secondary data. Interestingly, eight themes emerged from only the primary data, such as the difficulties in reaching the disaster scene, the security situation, unplanned random development, misuse of machinery, equipment and materials, employees' rights, staff movement and reduction of sections, frequent blackouts of the National Electricity, and morale and financial incentives. Only one theme, that of trust, emerged in the secondary data, yet did not appear in the primary data.

Most significantly, many of the shortcomings pointed out in the current disaster response management consist of weaknesses that are internal to the General Directorate of Civil Defence, such as education about disaster risk, endowment of equipment, financial resources, the planning process, and supporting ordinances; and that are external to the General Directorate of Civil Defence, such as citizens' irresponsible interventions, the particular security situation, coordination of organisations, and unplanned random building development.

In general, overall gaps during disaster response management in Iraq were identified by using good practice disaster response management factors. Moreover, the capacities of the current disaster response management in responding to disaster incidents, compared to established disaster response management factors when responding to human-made hazards, was reviewed (See Appendix E). By doing so, twenty-six weaknesses emerged from both primary and secondary data. It was revealed that good practices for disaster response management are not sufficiently implemented when compared with the importance attached to them.

6.6 Objective 4: Critically Evaluate the Strengths in the Disaster Response Management Stage with Particular Reference to Iraq

According to the findings in Chapter 4, nine points of strengths have emerged from both the primary and the secondary data. Through conducting cross-analyses of the four Disaster Response Management stages in Iraq (Planning, Organising, Directing, and Controlling), the findings show that two points of strength, namely, endowment of equipment, tools and infrastructure and disaster response team characteristics appeared in three different stages, while the rest of the strength points appeared in only one stage. An important finding is that some strengths were also discussed as being weaknesses, that is, the themes appeared in both sections.

To conclude, nine points of strengths of the current disaster response practices were identified, in order to make recommendations to improve the immediate response system to serve Iraq's disaster management in the future.

6.7 Objective 5: Make Recommendations to Improve the Effectiveness of Disaster Response Management Stemming From Terrorism in Iraq

The recommendations of this study were created to enhance disaster response management in Iraq through a series of expert interviews (see Sections 4.3.3, 4.4.3, 4.5.3, 4.6.3); document analyses (see Section 4.10 and Appendix I), and a comprehensive literature review (see Chapter 2). The recommendation for the endowment of equipment, tools, and infrastructure was present in all disaster response management stages, while recommendations for education about disaster risk and coordination were made in three of these stages. However, themes related to having specialist staff appeared in two different stages. The rest of the suggestions were only present in one stage.

Sets of recommendations emerged from this study, prior to validation (see Appendix L). After validation, the final set of recommendations were identified (see Section 5.9). The final sets of recommendations were made up of different themes and also, interestingly, one of the recommendations had a different focus in the Iraqi context, in that the generic literature recommended decentralisation as the best way forward in a disaster management context; yet, the Iraqi experts recommended that centralisation (with some flexibility) was preferable. The latter was adopted in this study.

The final sets of recommendations, which were grouped under eleven different themes, were further classified under the PEST business tool to show the influence of political, economic, sociocultural and technological factors on disaster response management.

To summarise, eleven sets of recommendations were identified in this study, after the validation process, to improve the immediate response system to serve Iraq's disaster management in the future. Such sets of recommendations were linked to the PEST business tool to show how these recommendations influence different sectors of society.

6.8 Contribution to Theory

Although there is extensive literature on disaster studies in developed countries, there is a dearth of literature in the context of developing countries. Because very little research has been conducted in Iraq and in the Arab World more generally, this research contributes to the disaster literature in a developing country context, as it is unique in its findings. This uniqueness is because of the very limited attempts that have been made in the past to explore disaster response management in Iraq, possibly due to the difficulty in collecting data during terrorism activities. Therefore, this research helps to provide insight into the dynamic of the Iraqi civil defence response to acts of terrorism and large-scale destruction, besides offering ideas for lines of further inquiry. Exploring and evaluating the current situation related to disaster response management in Iraq has been identified as a way of addressing the problems faced, by effectively responding to disasters stemming from terrorism in Iraq. Information was collected to prepare this research on the current state of disaster response in Iraq. The character and nature of Iraq's hazards, particularly human-made ones, and their risk of becoming a complex disaster was sought. Besides that, challenges and obstacles facing disaster response management throughout the world were reviewed. Thus, this study contributes to theory by identifying various types of challenges facing disaster response management globally. In addition to that, primary data, collected and analysed in Chapter 4, has not been published before. Therefore, it is expected to be the main contribution to theory.

Further, the proposed recommendations complement the existing literature, since one particular finding was different to the previous study. Previous studies had found that decentralisation was the good practice solution; however, in the Iraqi context, this was found to be inappropriate and in fact, centralisation with an element of flexibility was found to be more suitable, thereby further enriching the knowledge of disaster response management.

In addition, this research has been prepared with the overall goal of enhancing the understanding of the current state of disaster response management stemming from terrorism in Iraq. To assess the level of response to human-made disasters, a review of existing disaster, particularly terrorism, was undertaken. Besides that, elements and factors that influence the disaster response management process were found in the literature. Overall gaps during disaster response management in Iraq were identified by using these factors. Moreover, the capacities of the current disaster response management in responding to disaster incidents, compared to established disaster response management factors when responding to human-made hazards, was reviewed (See Appendix E). The original contribution to knowledge is the identification of these good practice disaster response management factors. Further, this research contributed to knowledge by identifying the weaknesses and the strengths of the current disaster response practices and analysed all the problems and the defects in every element, in order to make recommendations to improve the immediate response system to serve Iraq's disaster management in the future.

6.9 Contribution to Practice

By conducting a proper evaluation of the current disaster response practices through identifying points of weakness, strengths, and recommendations, the response process in its four stages (Planning, Organising, Directing, and Controlling) will be improved, which will ultimately minimise the loss of life and damage to property. By proposing sets of recommendations for the Iraqi General Directorate of Civil Defence, this will raise awareness and possibly address these weaknesses and enhance disaster response practices. Addressing these weaknesses will help to improve Iraq's ability to respond more effectively and efficiently to disasters. Besides that, enhancing disaster response practices will increase the level of resilience of society by improving their knowledge and awareness of disaster risks and training them in how to act in a disaster situation. Suggesting these sets of recommendations to stakeholders in the Iraqi Ministry of Interior/ the General Directorate of Civil Defence means they will, at least, be considered in the development of programs that will contribute to strengthening disaster response management in the future. Accordingly, the national disaster response management at the central, regional, governorate and community levels in Iraq will strengthen. Moreover, the capacity building and institutional development support on disaster response management in Iraq will develop. Furthermore, this study not only proposes sets of recommendations, but it also reveals the value of disaster management in general and the disaster response management stage in particular.

Decision makers in the government in Iraq can benefit from this research in their mission to meet the disaster response management knowledge needs. At the same time, their mission to educate the disaster response professionals working in the disaster management sector in Iraq can be promoted by considering the outcomes of this study. This will, in turn, enhance a quick response performance of all disaster management authorities.

To respond successfully to disaster, the factors of good practice disaster response management identified should be carefully considered for effective disaster management. By considering these factors, organisations will be aware of their needs, problems, and the defects in every element. To improve the response process, organisations need to be aware of their needs and coordinate with those organisations that can fulfil their needs.

This research might also be used in other countries that are at risk of human-induced hazard. However, the context of Iraq is very particular and so careful consideration must be exercised to ensure that the context is similar enough to warrant the findings being used elsewhere.

6.10 Limitations of the Study

This section presents the limitations of this research. The main limitations of this study relate to different points.

1. There is a lack of secondary data in terms of information and statistical data that are related to the research topic. Therefore, to increase the credibility of this research, the researcher obtained documents from different governmental organisations, such as the Iraqi Ministry of Interior, Iraqi Ministry of Health, and General Directorate of Civil Defence, in Baghdad.
2. The main limitations that affected the study are the resources of time and money. For example, the embassy should be responsible for all payments for travel expenses, however, due to the unsettled situation, the researcher paid for this. In terms of a time resource, strikes by transportation staff meant that sometimes roads were blocked and interviews had to be rescheduled or postponed.
3. During the researcher's IA exam, the research situation was discussed; the researcher was potentially open to two types of risk. The first risk was collecting the data from Iraq, in being exposed to terrorism activities. For example, the place where the interviews were conducted has been attacked by terrorists at least 3 times. The second risk was accessing the websites related to terrorist activity, controlled by the government in the UK. In order

to minimise this limitation, the required procedures were followed and approved by the University of Salford.

4. Due to the strict security restrictions in all the governmental institutions, all electronic devices were confiscated, including recording devices, therefore the interviews could not be recorded, which meant that the transcription process became more difficult.
5. The interviewees could not provide their contact number, due to the sensitive workplace and concerns about personal safety. The situation there is very unstable and sometimes they have to leave their workplace for urgent reasons.
6. The researcher could not conduct more than one interview on any given day, also the interviews were sometimes disrupted, so it was either completed on the same day or completed another day; this is all due to the unsettled situation.
7. There were personal limitations during this study, including the amount of travel time to and from interviews, which happened to be during Ramadan, and the extremely hot weather conditions, which often reached more than 50 degrees. There is a law in Iraq that states that when the temperature exceeds 50 degrees, a national holiday is announced. The researcher faced this issue 3 times during data collection, thus putting, even more, pressure on time allocation. Other months of the year would have been more comfortable, but family commitments meant that data collection had to be conducted during the summer school holidays. Personal circumstances meant that there was no other option. All of these factors limited the primary data collection.
8. Some of the information obtained for this thesis is extremely sensitive in political terms. The researcher had to convince the primary data providers that this work would only be published in academic journals or conferences, not published in the media.
9. There were cultural limitations in terms of gender; all of the institutions employ males, the researcher is female, and this restricted actions.
10. There were difficulties in translating the specific terminology. Many meetings were held with English language experts to ensure that the transcription was accurate.
11. The hardest experience, and therefore a limitation, was when interviewees expressed grief and horror about terrorist attacks, about people being killed and injured, people being burnt, and other such horrific incidents. This affected normal sleep patterns and caused upset to the researcher.

6.11 Further Research

Further research could be conducted to build on the foundation laid in this thesis to further enhance knowledge in disaster response management. The following are some suggested future areas of work.

1. Similar studies with a different research boundary.

   There are a number of stakeholders involved during the disaster response stage in Iraq; namely, the General Directorate of Civil Defence, the Health Department, NGOs, and the Iraqi Red Crescent Society. For this study, the case study boundary was the General Directorate of Civil Defence. Thus, further research could be conducted on evaluating disaster response management in other key sectors, such as the Health Department, NGOs, and the Iraqi Red Crescent Society.

2. Similar studies with different units of analysis.

   The unit of analysis of this study was disaster response management - one of four different stages for disaster management; namely, response, reconstruction, mitigation, and preparedness. However, future studies could be carried out on different disaster management stages.

3. Similar studies with different contexts.

   Recently, terrorist activities are a reality not only in Iraq and the Middle East but throughout the world. Therefore, future studies could be carried out in countries at risk of human-induced hazards, such as Syria, Libya, Turkey, Pakistan, and Afghanistan.

4. Similar studies with different scenarios, such as the response to floods, volcanoes, fires or any natural disaster. Insights into different types of disasters can help to identify different needs for the disaster response process.

5. Management of the Mosul Dam.

   The Mosul Dam, in Iraq, is vulnerable to attack from terrorists or from a lack of regular maintenance, due to terrorist attacks on the nearby city of Mosul. If this dam were to collapse, it would cause a natural disaster on a large scale. According to Filkins (2017), large parts of Mosul would be submerged in less than three hours, and riverbanks, towns, and cities containing the heart of Iraq's population would be flooded. He said that in four days, a wave as high as sixteen feet would hit Baghdad, a city of six million people, putting as many as 1.5 million lives at risk (Filkins, 2017).

6.12 Summary of Contribution to Knowledge

The main findings of this study, obtained from both primary data and secondary data, has been summarised in this chapter. Although disaster response management is generally accepted as being important, no single study exists which adequately covers the problem of disaster response management stemming from terrorism in Iraq. Through conducting this study, this gap was identified and addressed. Meanwhile, it contributes to the knowledge as follows:

- Drawing up the challenges facing disaster response management throughout the world in general, and those facing the Iraqi General Directorate of Civil Defence in particular.
- Identifying the factors of good practice in disaster response management.
- Identifying the overall gaps during disaster response management in Iraq.
- Identifying points of weakness and strengths on the current disaster response practices in Iraq.
- Proposing sets of recommendations for the Iraqi General Directorate of Civil Defence.

APPENDICES

APPENDIX A LIST OF PUBLICATIONS

Published papers

1. Evaluation of the System of Disaster Management Resulting from War Operations and Terrorism in Iraq (Al-Dahash, Kulatunga, & Amaratunga, 2014)

- Al-Dahash, H., Kulatunga, U., & Amaratunga, D. (2014). Evaluation of the System of Disaster Management Resulting from War Operations and Terrorism in Iraq. Procedia Economics and Finance, 18(4th International Conference on Building Resilience, Incorporating the 3rd Annual Conference of the ANDROID Disaster Resilience Network, 8th – 11th September 2014, Salford Quays, United Kingdom), 900-907.

2. Review of Disaster Response Management Challenges from War Operations and Terrorism in Iraq (Al-Dahash & Kulatunga, 2015)

- Al-Dahash, H., & Kulatunga, U. (2015). Review of Disaster Response Management Challenges from War Operations and Terrorism in Iraq. Paper presented at the 5th International Conference on Building Resilience, 15th - 17th July 2015, Newcastle, New South Wales, Australia, 339-1-339-13.

3. Disaster Response Management Stemming From War Operation and Terrorism in Iraq (Al-Dahash, Kulatunga, & Al-Dehesh, 2015)

- Al-Dahash, H., Kulatunga, U., & Al-Dehesh, A. (2015). Disaster Response Management Stemming From War Operation and Terrorism in Iraq. Paper presented at the 12th International Post-Graduate Research Conference, 10-12 June 2015, Media City, UK, 432-444.

4. Challenges during Disaster Response Planning Resulting From War Operations and Terrorism in Iraq (Al-Dahash, Thayaparan, & Kulatunga, 2016a)

- Al-Dahash, H., Thayaparan, M., & Kulatunga, U. (2016). Challenges during disaster response planning resulting from war operations and terrorism in Iraq. Paper presented at the 12th International Conference of the International Institute for Infrastructure Resilience and Reconstruction (IIIRR), August 5-7, 2016, Kandy, Sri Lanka, 87-95.

5. Understanding the Terminologies: Disasters, Crisis, and Emergency (Al-Dahash, Thayaparan, & Kulatunga, 2016b)

- Al-Dahash, H., Thayaparan, M., & Kulatunga, U. (2016). Understanding the Terminologies: Disasters, Crisis, and Emergency. Paper presented at the 32nd Annual ARCOM Conference, 5-7 September 2016, Manchester, UK, 1191-1200.

6. Evaluating Disaster Response Management Stemming from War Operation and Terrorism in Iraq: Methodological Approach (Al-Dahash & Kulatunga, 2017)

- Al-Dahash, H. & Kulatunga, U. (2017). Evaluating Disaster Response Management Stemming from War Operation and Terrorism in Iraq: Methodological Approach. Paper presented at the 13th International Postgraduate Research Conference (IPGRC), 14-15 September, 2017, University of Salford, UK, pp. 466-477.

7. Cloud Computing for Disaster Response Management Stemming from Terrorism in Iraq (Al-Dahash, Al-Shammari, Kulatunga, & Hardman, 2017)

- Al-Dahash, Hajer; Al-Shammari, Shaymaa; Udayangani, Kulatunga; Hardman, Maggie (2017). Cloud Computing for Disaster Response Management Stemming from Terrorism in Iraq. Paper presented at the 13th International Postgraduate Research Conference (IPGRC), 14-15 September, 2017, University of Salford, UK, 295-306.

8. Challenges Facing the Controlling Stage of the Disaster Response Management Resulting from War Operations and Terrorism in Iraq

- Al-Dahash, H. & Kulatunga, U. (2017). Challenges Facing the Controlling Stage of the Disaster Response Management Resulting from War Operations and Terrorism in Iraq. Paper presented at the 7th International Conference on Building Resilience, Using scientific knowledge to inform policy and practice in disaster risk reduction, 27-29 November 2017, Bangkok, Thailand. (Under Review)

APPENDIX B ELEMENT OF GOOD PRACTICE DISASTER RESPONSE MANAGEMENT

Author	Good Practice
(Carreño et al., 2007) (Carreño et al., 2005) (Cardona, 2005) (Cardona, 2006)	**Identification of risk** (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) 1) Systematic disaster and loss inventory. 2) Hazard monitoring and forecasting. 3) Hazard evaluation and mapping. 4) Vulnerability and risk assessment. 5) Public information and community participation. 6) Training and education on risk management. **risk reduction** 1) Risk consideration in land use and urban planning. 2) Hydrographical basin intervention and environmental protection. 3) Implementation of hazard-event control and protection techniques. 4) Housing improvement and human settlement relocation from prone-areas. 5) Updating and enforcement of safety standards and construction codes. 6) Reinforcement and retro fitting of public and private assets. **disaster management** 1) Organization and coordination of emergency operations. 2) Emergency response planning and implementation of warning systems. 3) Endowment of equipment, tools and infrastructure. 4) Simulation, updating and test of inter institutional response. 5) Community preparedness and training. 6) Rehabilitation and reconstruction planning. **governance and financial protection** 1) Interinstitutional, multisectoral and decentralizing organization. 2) Reserve funds for institutional strengthening. 3) Budget allocation and mobilization. 4) Implementation of social safety nets and funds response. 5) Insurance coverage and loss transfer strategies of public assets. 6) Housing and private sector insurance and reinsurance coverage.
(Quarantelli, 1997a) (Quarantelli, 1997b) (Hughey, 2008)	1) Correctly recognising differences between response and agent-generated demands. 2) Adequately carrying out generic functions. 3) Effectively mobilising personnel and resources. 4) Generating an appropriate delegation of tasks and division of labour. 5) Adequately processing information. 6) Properly exercising decision-making.

	7) Developing overall coordination. 8) Blending emergent and established organisational behaviours. 9) Providing appropriate reports for the news media. 10) Having a well-functioning emergency operations centre (Hughey, 2008; Quarantelli, 1997a, 1997b).
(Henstra, 2010)	Response Policies (Henstra, 2010) 1) Emergency operations centre. 2) Incident management system. 3) Evacuation plan. 4) Emergency shelter arrangements. 5) Volunteer management. 6) Community emergency response teams. 7) Search and rescue. 8) Emergency public information.
(Moe & Pathranarakul, 2006)	critical success factors for successful disaster management (Moe & Pathranarakul, 2006) 1) Effective institutional arrangement. 2) Coordination and collaboration. 3) Supportive laws and regulations. 4) Effective information management system. 5) Competencies of managers and team members. 6) Effective consultation with key stakeholders and target beneficiaries. 7) Effective communication mechanism. 8) Clearly defined goals and commitments by key stakeholders. 9) Effective logistics management. 10) Sufficient mobilization and disbursement of resources(Moe & Pathranarakul, 2006).
(Faulkner, 2001)	Ingredients of the tourism disaster management planning process and its outcomes should include: (Faulkner, 2001) 1) Risk assessment. 2) Prioritisation. 3) Protocols. 4) Community capabilities audit. 5) Disaster management command centre. 6) Media and monitoring activities. 7) Warning systems. 8) Flexibility. 9) Involvement, education and review.
(Wallace & De Balogh, 1985)	The information requirements for Emergency Response stage :(Wallace & De Balogh, 1985) * Have EOC alert procedures been initiated and what is the detailed status of EOC mobilization? * What situation assessment procedures have been initiated? How is the damage reporting system operating? * What are our inventories of emergency resources and where are they located? * What local jurisdictions may be involved? * What "imminent danger" conditions (e.g., dam break) exist?

	* What key officials need to be briefed and what is the required information needed for the briefing? * What emergency e evacuation requirements are there and where? * What non-EOC organisations must be mobilized for emergency response? * Have requirements assessment and legal procedures for requesting short-term emergency state and federal assistance been initiated?
(Burling & Hyle, 1997; Quarantelli, 1984)	Disaster preparedness (Burling & Hyle, 1997, pp. 234-235; Quarantelli, 1984, pp. 5-24) The Disaster Research Centre promotes the following general principles of disaster preparedness planning: • convening meetings for the purpose of sharing information; • holding disaster drills, rehearsals and simulations; • developing techniques for training, knowledge transfer and assessments; • formulating memoranda of understanding and mutual aid agreements; • educating the public and others involved in the planning process; • obtaining, positioning and maintaining relevant material resources; • undertaking public educational activities; • establishing informal linkages between involved groups; • thinking and communicating information about future dangers and hazards; • drawing up organizational disaster plans and integrating them with overall community-mass-emergency plans; and continually updating obsolete materials/strategies.
(Fischer, 2005)	Fischer (2005) presented three factors which effected the organizational response, namely, the extent to which emergency plans are rehearsed, the degree of prior disaster experience, and the level of prior planning.
(Zhou, Huang, & Zhang, 2011)	* Well-planned emergency relief supply system * Reasonable organizational structure and clear awareness of responsibilities * Applicable emergency response plan and regulations * Financial ensuring measures and prior planning of logistic centers and shelters * Education campaign on disaster prevention and response * Specific training of professionals such as rescue workers and medical staff * Strong ability to send out specific early warning about potential hazards * Regular organization of simulated disaster exercise * Very short response time to start the emergency plan * Government unity of leadership to plan and coordinate as a whole * The involvement and support of army * Timely and accurate relief needs assessment * The security of relief aids during distribution and transportation * Clear procedure of reporting and submitting information * Effective emergency information system to ensure information transferring * Application of modern logistics technology * Reconstruction and staff comforting * Statistics and feedback of loss information * Evaluation on the efficiency and effectiveness of the management system * Continuous improvement of the operational system of emergency management

(Terawi, 2008)	1) Information and Communication A) Information exchanging between employees in the organization refers to the disaster B) Transferring information about the disaster to the public from the organization or vice versa C) Information sharing between the various relevant agencies in various organisations 2) The clarity of tasks and responsibilities 3) The effectiveness of the incentives provided 4) Coordination between organisations and departments within the organization 5) The availability of resources in the organization A) The ability to assess the resources availability B) The ability to inventory and unify the resources available
(Lettieri et al., 2009)	The literature shows mainly two classifications of agents. On one hand Wybo and Kowalski (1998) argues a functional classification that they use for both actors and technologies. These classifications have been developed specifically for command centers. Agents are classified against four functions: (Committee 101) perception (data collecting and processing); (2) analysis (decision making); (Frykberg & Tepas 3rd) communication (inside organisations); and (4) information (communication outside organisations). On the other hand, authors such as Kreps (1983) and Perry (1991) argue a sectorial classification that defines the various sectors involved in disaster management. In detail they identify: . public sector (the most relevant and responsible actor); . private industry (including all economic sectors); and . volunteer agencies (i.e. Red Cross and NGOs).
(Batho et al., 1999)	**Evaluating the response** On the positive side a number of factors were identified by those involved in responding to the devastation caused by the bombing as being helpful to the response process. • Pre-determined strategies • Training • Communication • Cordon access • Evacuation • The scale of the disaster • Lack of structures for recovery

APPENDIX C ELEMENT OF GOOD PRACTICE DISASTER RESPONSE MANAGEMENT CATEGORISED BY MANAGEMENT STAGES

Author	Stage	Theme	Good Practice
(Henstra, 2010) (Faulkner, 2001) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Fischer, 2005) (Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)	Planning	planning process	- The extent to which emergency plans are rehearsed. - The level of prior planning. - Evacuation plan. - Prioritisation. - Educating the public and others involved in the planning process. - Drawing up organizational disaster plans and integrating them with overall community-mass-emergency plans; and continually updating obsolete materials/strategies. - Systematic disaster and loss inventory. - Risk consideration in land use and urban planning. - Hydrographical basin intervention and environmental protection. - Housing improvement and human settlement relocation from prone-areas. - Reinforcement and retro fitting of public and private assets. - Emergency response planning and implementation of warning systems. - Endowment of equipments, tools and infrastructure. - Rehabilitation and reconstruction planning. - Well-planned emergency relief supply system - Applicable emergency response plan and regulations - Financial ensuring measures and prior planning of logistic centers and shelters - Government unity of leadership to plan and coordinate as a whole - Pre-determined strategies
(Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011)	Planning	financial resources	- Reserve funds for institutional strengthening. - Budget allocation and mobilization. - Implementation of social safety nets and funds response. - Insurance coverage and loss transfer strategies of public assets.

			- Housing and private sector insurance and reinsurance coverage. - Financial ensuring measures and prior planning of logistic centers and shelters
(Henstra, 2010) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007)	Planning	management framework and factors	- Incident management system. - Updating and enforcement of safety standards and construction codes.
(Hughey, 2008; Quarantelli, 1997a, 1997b) (Moe & Pathranarakul, 2006)	Planning	program integration	- Adequately carrying out generic functions. - Effective institutional arrangement.
(Moe & Pathranarakul, 2006) (Wallace & De Balogh, 1985) (Zhou, Huang, & Zhang, 2011)	Planning	supporting ordinances	- Supportive laws and regulations. - What local jurisdictions may be involved? - Have requirements assessment and legal procedures for requesting short-term emergency state and federal assistance been initiated? - Applicable emergency response plan and regulations
(Faulkner, 2001) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)	Planning	education about disaster risk	- Involvement, education and review. - Community capabilities audit. - Undertaking public educational activities. - Training and education on risk management. - Community preparedness and training. - Education campaign on disaster prevention and response - Specific training of professionals such as rescue workers and medical staff - Training
(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang,	Organising	coordination problems	- Developing overall coordination. - Generating an appropriate delegation of tasks and division of labour. - Volunteer management. - Search and rescue. - Coordination and collaboration. - Organisation and coordination of emergency operations. - Reasonable organizational structure and clear awareness of responsibilities - Regular organization of simulated disaster exercise - Government unity of leadership to plan

2011)			and coordinate as a whole - The involvement and support of army
(Hughey, 2008; Quarantelli, 1997a, 1997b) (Henstra, 2010) (Faulkner, 2001) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24)	Organising	"problem of interplay" coordination between the donor countries and the end beneficiaries	- Protocols. - Formulating memoranda of understanding and mutual aid agreements. - Correctly recognising differences between response and agent-generated demands. - Blending emergent and established organisational behaviours. - Community emergency response teams. - Establishing informal linkages between involved groups.
(Moe & Pathranarakul, 2006) (Fischer, 2005)	Organising	hierarchy problems	- Competencies of managers and team members. - The degree of prior disaster experience.
(Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007)	Organising	deviant and chaotic	- Implementation of hazard-event control and protection techniques.
(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b) (Moe & Pathranarakul, 2006) (Faulkner, 2001) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Fischer, 2005)	Organising	Centralized and decentralized	- Properly exercising decision-making. - Effective consultation with key stakeholders and target beneficiaries. - Clearly defined goals and commitments by key stakeholders. - Flexibility. - Interinstitutional, multisectoral and decentralizing organization - The degree of prior disaster experience. -
(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Faulkner, 2001) (Wallace & De Balogh, 1985) (Burling & Hyle, 1997, pp. 234-235; Quarantelli, 1984, pp. 5-24)	Directing	command centre	- Emergency operations centre. - Adequately processing information. - Having a well-functioning emergency operations centre. - Effective information management system. - Disaster management command centre. - Media and monitoring activities. - Warning systems. - Have EOC (emergency operations centre) alert procedures been initiated and what is the detailed status of EOC mobilization? - What key officials need to be briefed and what is the required information needed for the briefing?

(Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)			- What non-EOC organisations must be mobilized for emergency response? - Convening meetings for the purpose of sharing information. - Thinking and communicating information about future dangers and hazards. - Hazard monitoring and forecasting. - Strong ability to send out specific early warning about potential hazards - Clear procedure of reporting and submitting information - Effective emergency information system to ensure information transferring - The scale of the disaster
(Hughey, 2008; Enrico L Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Batho, Williams, & Russell, 1999) (Quarantelli, 1988)	Directing	communication	- Providing appropriate reports for the news media. - Emergency public information. - Effective communication mechanism. - Public information and community participation. - Communication - Intra- and inter-organisational behaviours between organisations. - From organisations to the public. - From the public to organisations. - Within systems of organisations. -
(Zhou, Huang, & Zhang, 2011) (Batho, Williams, & Russell, 1999)	Directing	speed is typically essential	- Very short response time to start the emergency plan - Cordon access - Evacuation
(Hughey, 2008; Quarantelli, 1997a, 1997b) (Henstra, 2010) (Moe & Pathranarakul, 2006) (Wallace & De Balogh, 1985) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Zhou,	Directing	providing the right relief supplies for people in need at the right time	- Effectively mobilising personnel and resources. - Emergency shelter arrangements. - Effective logistics management. - Sufficient mobilization and disbursement of resources. - What are our inventories of emergency resources and where are they located? - What emergency evacuation requirements are there and where? - obtaining, positioning and maintaining relevant material resources - Timely and accurate relief needs assessment - The security of relief aids during

Huang, & Zhang, 2011)			distribution and transportation - Application of modern logistics technology
(Faulkner, 2001) (Wallace & De Balogh, 1985) (Burling & Hyle, 1997, pp. 234-235; Enrico Louis Quarantelli, 1984, pp. 5-24) (Cardona, 2005; Carreño et al., 2005; Carreño et al., 2007) (Zhou, Huang, & Zhang, 2011)	Controlling	Evaluations are critical	- Risk assessment. - What situation assessment procedures have been initiated? How is the damage reporting system operating? - What "imminent danger" conditions (e.g., dam break) exist? - holding disaster drills, rehearsals and simulations; - Developing techniques for training, knowledge transfer and assessments. - Hazard evaluation and mapping. - Vulnerability and risk assessment. - Simulation, updating and test of inter institutional response. - Statistics and feedback of loss information - Evaluation on the efficiency and effectiveness of the management system - Continuous improvement of the operational system of emergency management

APPENDIX D ETHICAL APPROVAL

Academic Audit and Governance Committee

College of Science and Technology Research Ethics Panel (CST)

To **Hajer Al-Dahash (and Dr Udayangani Kulatunga)**

cc: **Professor Hisham Elkadi, Head of School of SOBE**

From **Nathalie Audren Howarth, College Research Support Officer**

Date **8/05/2015**

Subject: **Approval of your Project by CST**

Project Title: **Evaluation of disaster response management resulting from war operations and terrorism in Iraq**

REP Reference: **CST 15/16**

Following your responses to the Panel's queries, based on the information you provided, I can confirm that they have no objections on ethical grounds to your project.

If there are any changes to the project and/or its methodology, please inform the Panel as soon as possible.

Regards,

Nathalie Audren Howarth

College Research Support Officer

APPENDIX E QUESTIONNAIRE

Reference number

QUESTIONNAIRE

Research Title: Evaluation of disaster response management in Iraq resulting from terrorism

This questionnaire is based on an ongoing PhD which seeks to evaluate and synthesise the context of disaster response management stemming from terrorism in Iraq. The questionnaire intends to capture the difference between the levels of importance and implementation of the elements of the good practices disaster response management. As such this questionnaire is divided into 4 major sections based on the four functions of management planning, organising, directing and controlling.

Section 1: General information.

Section 2: Elements of good practices disaster response management during the planning stage.

Section 3: Elements of good practices disaster response management during the organizing stage.

Section 4: Elements of good practices disaster response management during the directing stage.

Section 5: Elements of good practices disaster response management during the controlling stage.

Scope: Is investigating disaster response management stemming from terrorism in Iraq.

Confidentiality: The information collected will be used for the sole purpose of this study and for academic publications. The findings of the study will not be attributed to any specific personnel.

Please return the completed questionnaire on or before:

PhD Researcher
Hajer Al-Dahash
Centre for Disaster Resilience, Room 346,
School of the Built Environment,
University of Salford,
Salford M5 4WT,
UK
Email: H.F.Al-Dahash@edu.salford.ac.uk
Tel: +44(Committee 101)161 295 6942

Supervisor
Dr Udayangani Kulatunga
Email: U.Kulatunga@salford.ac.uk
Tel: +44 (Committee 101) 161 295 6943

Section 1: General information

1. Your present job title:
2. Years of experience in responding to disasters stemming from war operations and terrorism in Iraq:

Note: The questionnaire is designed to capture 2 aspects of each element listed. One is the level of importance that each element has and the actual level of implementation of that element. As such you are required to tick 2 boxes either side of each indicator.

Section 2: Elements of good practices disaster response management during the planning stage.

The following tables present the elements of good practices disaster response management throughout different themes during the planning stage. Based on your experience, please tick the most appropriate box on the scale regarding the importance and implementation of the element during the planning stage.

Elements of good Practices are defined as the set of factors which influence disaster response management.

Planning is "selecting objectives and then establishing programs and procedures for achieving the objectives".

1. Planning process عملية التخطيط												
The extent of importance (مدى الأهمية)							**The extent of implementation (مستوى التطبيق)**					
Unimportant غير مهم	**Of little importance قليل الأهمية**	**Moderately important متوسط الأهمية**	**Important مهم**	**Very important مهم جدا**	**No Opinion N/O لا رأي**	**Elements of Good Practices عناصر من أفضل الممارسات**	**Never غير مطبق**	**Rarely مطبق نادرا**	**Sometimes مطبق أحيانا**	**Very often مطبق غالبا**	**Always مطبق دائما**	**No Opinion N/O لا رأي**
1	**2**	**3**	**4**	**5**		**scale**	**1**	**2**	**3**	**4**	**5**	
						The extent to which emergency plans are rehearsed إلى أي مدى يتم التدرب على خطط الطوارئ						
						The level of prior planning مستوى تخطيط مسبق						
						Implementation of warning systems تنفيذ نظم الإنذار						
						Existence of an evacuation plan وجود خطة الإخلاء						
						Flexibility in switching to alternative plans المرونة في التحول إلى خطط بديلة						
						Drawing up organizational disaster plans and integrating them with overall community-mass-emergency plans. وضع خطط تنظيمية للكارثة ودمجها مع خطط الطوارئ الشاملة للمجتمع						
						Pre-determined strategies الاستراتيجيات محددة سلفا						
						Continually updating obsolete materials (documents) and strategies تحديث باستمرار اللوازم (الوثائق) والاستراتيجيات التي عفا عليها الزمن						
						Systematically maintaining disaster and loss inventory الحفاظ على جرد الكوارث والخسائر بصورة منتظمة						
						Human settlement relocation from disaster prone-areas						

						إعادة توطين المستوطنات البشرية من المناطق المعرضة لخطر الكارثة						
						Endowment of equipment, tools and infrastructure الوقف من المعدات والأدوات والبنية التحتية						
						Enforcement of safety standards and construction codes تطبيق معايير السلامة ومدونات البناء						
						Updating of safety standards and construction codes تحديث معايير السلامة و مدونات البناء						
						Well-planned emergency relief supply system التخطيط الجيد لنظام إمدادات الإغاثة في حالات الطوارئ						
						Applicable emergency response plan خطة الاستجابة في حالات الطوارئ قابلة للتطبيق						
						Prior planning of public shelters التخطيط المسبق للملاجئ العامة						
						Prior planning of logistic centres التخطيط المسبق للمراكز اللوجستية						
						Government unity of leadership to plan as a whole وحدة (اتفاق) الحكومة في قيادة التخطيط ككل						
2. Financial resources الموارد المالية												
						Reserve funds for institutional strengthening الأموال الاحتياطية للتعزيز المؤسسي						
						Budget allocation تخصيص (تبويب) الميزانية						
						Budget mobilization تحريك الميزانية						
3. Supporting ordinances الانظمة الداعمة												
						Supportive laws and regulations القوانين والأنظمة الداعمة						
						The involvement of local jurisdictions إشراك السلطات القضائية المحلية						
						Legal procedures for requesting short-term emergency state and for initiating federal assistance الإجراءات القانونية لطلب حالة الطوارئ على المدى القصير وللشروع في طلب المساعدة الاتحادية						
						Applicable emergency response regulations لوائح الاستجابة للطوارئ قابلة للتطبيق						
4. Education about disaster risk التعليم حول مخاطر الكوارث												
						Undertaking public educational activities القيام بأنشطة تثقيف الجمهور						
						Community capabilities audit تدقيق / مراجعة قدرات المجتمع						
						Involvement, education and review مشاركة التعليم والاستعراض						
						Training and education on risk management التدريب والتعليم في مجال إدارة المخاطر						
						Community preparedness and training تأهب المجتمع والتدريب						
						Disaster drills, rehearsals and simulations مناورات الكوارث، التدريبات والمحاكاة						
						Developing techniques for training تطوير تقنيات للتدريب						
						Developing techniques for knowledge transfer تطوير تقنيات لنقل المعرفة						
						Simulation, updating and test of inter institutional response						

						المحاكاة، وتحديث واختبار استجابة مؤسسية مشتركة						
						Specific training of professionals such as rescue workers and medical staff التدريب الخاص للمهنيين مثل عمال الإنقاذ والطواقم الطبية						
						Educating the staff involved in the planning process تثقيف الموظفين المشاركين في عملية التخطيط						

Section 3: Elements of good practices disaster response management during the organizing stage.

The following tables present the elements of good practices disaster response management throughout different themes during organising stage. Based on your experience, please tick the most appropriate scale regarding the importance and implementation of the criteria during organizing stage.

Organising is defined as "a process that managers use to establish a structure of working relationships that allow organisational members interact and cooperate to achieve organisation goals".

1. Coordination problems مشاكل التنسيق

The extent of importance (مدى الأهمية) **The extent of implementation (مستوى التطبيق)**

غير مهم Unimportant	Of little importance قليل الأهمية	Moderately important متوسط الأهمية	مهم Important	Very important مهم جدا	لا رأي No Opinion N/O	Elements of Good Practices عناصر من أفضل الممارسات	غير مطبق Never	مطبق نادرا Rarely	مطبق أحيانا Sometimes	مطبق غالبا Very often	مطبق دائما Always	لا رأي No Opinion N/O
1	2	3	4	5			1	2	3	4	5	
						Developing overall coordination تطوير التنسيق العام						
						Generating an appropriate delegation of tasks and division of labour خلق انتداب مناسب للمهام وتقسيم العمل						
						Volunteer management إدارة المتطوعين						
						Search and rescue البحث والإنقاذ						
						Organization and coordination of emergency operations تنظيم وتنسيق عمليات الطوارئ						
						Regular organization of simulated disaster exercises التنسيق المنتظم للتمارين محاكاة الكارثة						
						Government unity of leadership to coordinate as a whole وحدة الحكومة في القيادة لتنسيق ككل						
						The involvement and support of the army مشاركة ودعم الجيش						
						Coordination between Organisations التنسيق بين المنظمات						
						Coordination between departments within the organization التنسيق بين الإقسام داخل المنظمة						
						Reasonable organizational structure and clear awareness of responsibilities الهيكل التنظيمي منطقي ومستوى وعي واضح للمسؤوليات						

2. "Problem of interplay" and coordination between the donor countries and the end beneficiaries "مشكلة التفاعل " والتنسيق بين الدول المانحة والمستفيدين النهائيين												
						Following protocols اتباع بروتوكولات ذات صلة						
						Formulating memoranda of understanding and mutual aid agreements صياغة مذكرات تفاهم واتفاقات المعونة المتبادلة						
						Correctly recognising differences between response and agent-generated demands التمييز بشكل صحيح الاختلافات بين متطلبات الاستجابة المتولدة والوكالات						
						Blending emergent and established organisational behaviours المزج الطارئ، وأنشأ السلوكيات التنظيمية						
						Community emergency response teams فرق المجتمع للاستجابة للطوارئ						
						Establishing formal linkages between involved groups اقامة روابط رسمية بين الجماعات المشاركة						
						Establishing informal linkages between involved groups اقامة روابط غير رسمية بين الجماعات المشاركة						
3. Hierarchy and Centralization problems مشاكل التسلسل الهرمي والمركزية												
						Competencies of managers and team members كفاءات المديرين وأعضاء الفريق						
						The degree of prior disaster experience درجة الخبرة السابقة للكوارث						
						Properly exercising decision-making الممارسة بشكل صحيح لصنع القرار						
						Effective consultation with key stakeholders and target beneficiaries التشاور الفعال مع أصحاب المصلحة الرئيسيين والمستفيدين المستهدفين						
						Clearly defined goals and commitments by key stakeholders التحديد بوضوح الأهداف والالتزامات من قبل الجهات المعنية الرئيسية						
						Flexibility of decision making المرونة في اتخاذ القرارات						

Section 4: Elements of good practices disaster response management during the directing stage.

The following tables present the elements of a good practices disaster response management throughout different elements during directing stage. Based on your experience, please tick the most appropriate scale regarding the importance and implementation of the criteria during directing stage.

Leading or directing is defined as "a guiding of employees and subordinates to help them to attain the organization's objectives with the maximum application of their abilities".

1. Command centre مركز القيادة The extent of importance (مدى الأهمية)							The extent of implementation (مستوى التطبيق)					
غير مهم Unimportant	Of little importance قليل الأهمية	Moderately important متوسط الأهمية	مهم Important	Very important مهم جدا	No Opinion N/O لا رأي	Elements of Good Practices عناصر من أفضل الممارسات	غير مطبق Never	مطبق نادرا Rarely	مطبق أحيانا Sometimes	مطبق غالبا Very often	مطبق دائما Always	No Opinion N/O لا رأي
1	2	3	4	5			1	2	3	4	5	
						Disaster management command centre مركز قيادة إدارة الكوارث						
						Having a well-functioning emergency operations centre وجود مركز عمليات الطوارئ يعمل بشكل جيد						
						Effective information management system نظام فعال لإدارة المعلومات						
						Adequately processing information معالجة المعلومات بشكل كاف						
						The detailed status of EOC mobilization وضع مفصل لتعبئة مركز عمليات الطوارئ						
						Key officials being briefed يتم إطلاع كبار المسئولين						
						Non-EOC Organisations being mobilized for emergency response المنظمات غير مركز عمليات الطوارئ -يجري حشد للاستجابة لحالات الطوارئ						
						Convening meetings for the purpose of sharing information عقد اجتماعات لغرض تبادل المعلومات						
						Hazard monitoring and forecasting رصد الأخطار والتنبؤ بها						
						Strong ability to send out specific early warnings about potential hazards قدرة قوية لارسال تحذيرات محددة في وقت مبكر حول الأخطار المحتملة						
						Clear procedure of reporting and submitting information إجراءات واضحة لتقديم التقارير والمعلومات						
						Effective emergency information system to ensure information transfer نظام فعال المعلومات في حالات الطوارئ لضمان نقل المعلومات						
						Scaling of the disaster قياس نطاق (حجم) الكارثة						
2. Communication الاتصالات												
						Effective communication mechanisms communication (inside organisations) آليات الاتصال الفعالة الاتصالات (داخل المنظمات)						
						Emergency public information information (communication outside organisations) معلومات الطوارئ العامة المعلومات (الاتصالات خارج المنظمات)						
						Providing appropriate reports for the media تقديم التقارير المناسبة لوسائل الإعلام						
						Public information and community participation المعلومات العامة والمشاركة المجتمعية						
						Transferring information about the disaster to the public						

						from the organization or vice versa نقل المعلومات حول كارثة للجمهور من المنظمة أو العكس						
						Information sharing between the various relevant agencies in various Organisations تبادل المعلومات بين مختلف الوكالات ذات الصلة في مختلف المنظمات						
3. Providing the right relief supplies for people in need at the right time **توفير إمدادات الإغاثة الصحيحة للمحتاجين في الوقت المناسب**												
						Effectively mobilising personnel and resources تعبئة بشكل فعال الموظفين والموارد						
						Emergency shelter arrangements ترتيبات المأوى في حالات الطوارئ						
						Effective logistics management إدارة الخدمات اللوجستية/ النقل والإمداد الفعالة						
						Sufficient mobilization and disbursement of resources تعبئة كافية والمصروفات من الموارد						
						Inventories of emergency resources قوائم جرد للموارد الطوارئ						
						Determination of the locations of emergency resources تحديد مواقع موارد الطوارئ						
						Existing of emergency evacuation requirements وجود متطلبات الإخلاء في حالات الطوارئ						
						Determination of the locations of emergency evacuation requirements تحديد مواقع متطلبات الإخلاء في حالات الطوارئ						
						Obtaining relevant material resources الحصول على الموارد المادية ذات الصلة						
						Positioning relevant material resources تحديد موضع الموارد المادية ذات الصلة						
						Maintaining relevant material resources الحفاظ على الموارد المادية ذات الصلة						
						Timely and accurate relief needs assessment تقييم احتياجات الإغاثة دقيقة وفي الوقت المناسب						
						The security of relief aid during distribution and transportation أمن مساعدات الإغاثة أثناء التوزيع والنقل						
						Application of modern logistics technology تطبيق التكنولوجيا الحديثة اللوجستية						
						The ability to inventory and unify the resources available القدرة على الجرد وتوحيد الموارد المتاحة						
4. Speed of response سرعة الاستجابة												
						Very short response time to start the emergency plan زمن الاستجابة قصيرة جدا لبدء خطة الطوارئ						
						The clarity of tasks and responsibilities وضوح المهام والمسؤوليات						
						The effectiveness of the financial incentives provided فعالية الحوافز المادية المقدمة						
						The effectiveness of the moral incentives provided فعالية الحوافز المعنوية المقدمة						
						Existence of cordon وجود طوق الأمني						
						Cordon access authorization الإذن (التفويض) للدخول إلى الطوق الأمني						
						Evacuation الإخلاء						

Section 5: Elements of good practices disaster response management during the controlling stage.

The following tables present the elements of good practices disaster response management throughout different elements during controlling stage. Based on your experience, please tick the most appropriate scale regarding the importance and implementation of the criteria during controlling stage.

Controlling is defined as "the measurement and correction of subordinates' activities and the production processes, to ensure that the enterprise's objectives and plans are being carried out".

1. Evaluations التقييم												
The extent of importance (مدى الأهمية)							**The extent of implementation (مستوى التطبيق)**					
Unimportant غير مهم	**Of little importance قليل الأهمية**	**Moderately important متوسط الأهمية**	**Important مهم**	**Very important مهم جدا**	**No Opinion N/O لا رأي**	**Elements of Good Practices عناصر من أفضل الممارسات**	**Never غير مطبق**	**Rarely مطبق نادرا**	**Sometimes مطبق أحيانا**	**Very often مطبق غالبا**	**Always مطبق دائما**	**No Opinion N/O لا رأي**
1	**2**	**3**	**4**	**5**			**1**	**2**	**3**	**4**	**5**	
						Conducting risk assessments إجراء تقييمات للمخاطر						
						Effective damage reporting system فعالية نظام إعداد تقارير الأضرار						
						Requirements assessment (for requesting short-term emergency state and federal assistance) تقييم متطلبات (لطلب حالة الطوارئ على المدى القصير والمساعدة الاتحادية)						
						Developing techniques for assessments تطوير تقنيات من أجل التقييمات						
						Hazard evaluation and mapping تقييم المخاطر ورسم الخرائط						
						Testing of inter institutional response اختبار الاستجابة المؤسسية المشتركة						
						Statistics and feedback of loss information الإحصاءات وردود الفعل من المعلومات المتعلقة بخسائر						
						Evaluation of the efficiency and effectiveness of the management system تقييم كفاءة وفعالية نظام الإدارة						
						Continuous improvement of the operational system of emergency management التحسين المستمر لنظام التشغيل لإدارة الطوارئ						

APPENDIX F INTERVIEW GUIDELINE

Interview reference number

Semi-structured Interview Guideline

Introduction

The main aim of this interview is to understand the interviewee's perspective about issues related to disaster response management in Iraq stemming from terrorism. The data collected from the interviews will help the researcher understand the current issues and concepts of disaster response management as they currently exist in this context. Accordingly, there are not right or wrong answers for the upcoming questions, rather it is a matter of reflecting the interviewee's experience with the phenomena as they were conceived.

Your rights

You may decide to stop being a part of the research study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn or destroyed. You have the right to omit or refuse to answer or respond to any question that is asked of you. You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome). If you have any questions as a result of reading this information sheet, you may query the researcher at any time.

Section 1:

- You have been working in this directorate since……?
- Which department do you belong to?
- How would you describe the disaster response management stemming from terrorism in Iraq?

Section 2: Weaknesses and issues in the disaster response management stages.

1) Planning stage

- What are the weaknesses of disaster response at planning stage?
- Why do you think proper planning is needed for disaster response?
- Who are the stakeholders involved?
- What are the strengths of disaster response at planning stage?
- How can we further improve the disaster response at planning stage?

2) Organising stage

- What are the weaknesses of disaster response at organising stage?
- Why do you think proper organising is needed for disaster response?
- Who are the stakeholders involved?
- What are the strengths of disaster response at organising stage?
- How can we further improve the disaster response at organising stage?

3) Directing stage

- What are the weaknesses of disaster response at directing stage?
- Why do you think proper directing is needed for disaster response?
- Who are the stakeholders involved?
- What are the strengths of disaster response at directing stage?
- How can we further improve the disaster response at directing stage?

4) Controlling stage

- What are the weaknesses of disaster response at controlling stage?
- Why do you think proper controlling is needed for disaster response?
- Who are the stakeholders involved?
- What are the strengths of disaster response at controlling stage?
- How can we further improve the disaster response at controlling stage?

Do you have any suggestion to the overall disaster response process?

APPENDIX G ACCESS DATA PERMISSION

بسم الله الرحمن الرحيم

Republic of Iraq
Ministry of Interior
Agency of Ministry for federal security affairs
General Civil Defense Directorate
Office of General Director
No:
Date:

جمهوريـة العـراق
وزارة الداخلية
وكالة الوزارة لشؤون الامن الاتحادي
مديرية الدفاع المدني العامة
مكتب المدير العام
العـدد / مقر / ١٤١
التاريخ/ ١٢ /٤/ ٢٠١٥

(الحشد الشعبي سند ظهير للجيش العراقي الباسل)

To: whom it may concern

Iraqi general directorate of civil defence does not mind that Hajer Faek Kudear Al-Dahash who enrolled as a PhD student in Salford University to have access to our directorate in order to collect some data by doing questionnaire, interviews and document analysis.

It's our pleasure to cooperate with this research at any time.

The research study title:

"Evaluation of disaster response management resulting from war operations and terrorism in Iraq"

Yours Sincerely

Major General
KAHDOM SALMAN BOHAN
Deputy General Manager of Iraqi civil defence

١٢ | ٤

العنوان: العراق / بغداد- ساحة النسور – هاتف (٥٤١٤٥٣٨)
فاكس : (٥٤٢٧٨٩٩) – (٥٤٢٩٠٩٩)
رقم طوارئ الدفاع المدني : (١١٥)
البريد الالكتروني : iraqicivildefense@gmail.com

ت . و (إدارية، مالية، فنية، أمنية)

Rashid 13-Apr-15

APPENDIX H INCLUDING NAME PERMISSION

To: whom it may concern

The Iraqi General Directorate of Civil Defence gives permission for Hajer Faek Kudear Al-Dahash, as a PhD candidate at the University of Salford, to include our name (Iraqi General Directorate of Civil Defence) in her thesis.

It's our pleasure to cooperate with this research at any time.

The research study title:

"Evaluation of disaster response management in Iraq Resulting from Terrorism"

Yours Sincerely,

Major General

KAHDOM SALMAN BOHAN

General Manager of Iraqi general directorate of civil defence

8.8.2017

APPENDIX I RELEVANT DOCUMENT

I.1 Study Conclusion

According to the Urban Planning Department (2014), it can be concluded that there are a lot of problems facing civil defence teams, such as: (Urban Planning Department, 2014):

a) The majority of civil defence centres in Baghdad Governorate (67.7%) are located on roads, which have a maximum speed limit of 30 km/h. This decreases the speed of civil defence vehicles to arrive at the scene. This late arrival can cause an increased number of losses.
b) The overrun of many of the popular markets onto the hard shoulder, which is forbidden, leads to closing the main streets completely and this is what affects the smooth flow of traffic and lack of access to civil defence teams to the accident place at the right time.
c) The prevalence of street vendors (Ganabr and Albesttiyat), with their often flammable stalls, causes the expansion of fires that can then spread to other places.
d) Connecting electric wires randomly, which leads to increased loads on the national electricity grid, in addition to the formation of spider grids of electric wires, can cause fires which spread quickly and easily, especially in the popular markets.
e) Reliance on private semi generic generators that are not compliant with the safety and security conditions. Fuel and oils have been observed near these generators, not stored properly, and this causes fires. This situation leads to the recurrence of fire accidents in popular markets and residential areas.

I.2 Analysis of the Reality of Disaster Management in Iraq

In 2010, The Iraqi National Security Council issued a decree to commission committee101 to take over a preparation for a proposal to the national strategy for disaster risk reduction in Iraq. After obtaining the strategic framework document approval by the Committee 101, a strategic draft has been prepared and contained in this document, in order to arrange it for discussion and approval.

In general, this review has included enhancing the understanding of the current status of disaster risk reduction and to support the objectives of the Hyogo Framework (HFA) approved by the UN in 2005 in building the resilience of nations and communities to disasters.

In this review, strengths, weaknesses, the expected threats, and opportunities have been identified, as shown below, in order to evaluate and display the reality of disaster management in Iraq.

I.2.1 Strength Point: (Committee 101, 2010)

1. The existence of laws related to disasters such as the Civil Defence Act, instructions and decisions related to this, and the Public Health Act.
2. The existence of codes of Construction and Safety Standards.
3. The existence of the emergency plan at key ministries to tackle disasters (the Ministry of Health and Ministry of Interior / Civil Defence Directorate).
4. The existence of practices, although differentiated, to deal with the disasters in the provinces.
5. The existence of vigorous efforts to secure national contingency plans for some specialised types of disasters, such as radiological, chemical, and biological emergency plans.

I.2.2 Weakness Point: (Committee 101, 2010)

1. Lack of community awareness of disaster response and risk reduction.
2. Weakness of early warning systems.
3. Weakness of the application of building codes and occupational safety standards in public and private facilities.
4. Lack of contingency plans in a large number of important facilities designed according to standardised criteria, with appropriate training.
5. Lack of clarity in the mechanisms for declaration of emergency in the disaster areas and legal implications of this announcement.
6. Lack of a unified national legal framework for disaster risk reduction and response (the existence of multiple systems, leading to failures in the application when multi nature disasters occur).
7. After 2003, state structural changes have not been reflected in the laws and regulations of disaster management (powers of the governors, the development of the region, the new ministries such as the Ministry of Science and Technology, Environment, and Displacement and Migration).

8. Weakness of telecommunications networks during disasters; often there are no alternatives.
9. Weakness of the mechanisms of coordination between the federal ministries and local governments on the subject of disaster.
10. Lack of clear exceptional administrative powers during disasters on the various administrative levels.
11. Weakness in capabilities at all levels particularly in local communities.
12. Weakness interesting academic and research institutions in addressing the subject of disaster and risk reduction.
13. Lack of documentation and systematic standard archives for disaster risk and its impact.
14. The weakness of civil society organisations involved in disaster response and risk reduction.
15. Weakness in contingency planning for disaster risk reduction in projects of development plans and regional development projects.

I.2.3 Challenges: (Committee 101, 2010)

1. Terrorism and security risks.
2. The presence of large numbers of displaced people and refugees may continue for some time to come.
3. Weakness in the application of safety standards in industrial facilities and particularly electrical installations.

Table I.0.1 shows the response strategy and requirements for capacity-building for every local government in Iraq in addition to different types of risks and population exposure to such risks. It can be seen that the majority of provinces have an urgent need for more training. Further, there is a desire to exercise better preparedness and response as part of disaster risk reduction.

Table I.0.1 The Most Important Risk-Prone Provinces in Iraq, Types of Risks and Population Exposure to Risks (Committee 101, 2010, pp. 7-8)

Governorate	Population (2007)	Risk sources Natural or human-made	Response strategy and requirements for capacity-building
Al-Anbar	1.485.985	Transport accidents, floods, sandstorms, explosions, gas leaks, fire	The local government and civil defence. The new government in place must be concerned with bringing about good results for the people who elected them.
Babylon	1.651.565	Population displacement, terrorism, industrial accidents, fires, floods, health epidemics.	The local government constitutes a response cell with health and civil defence. It needs to increase the

			administrative and technical applications for disaster management.
Baghdad	7.145.470	Water/air pollution, sandstorms, drought, water scarcity, terrorism, chemical and industrial accidents, health epidemics, radiation from a pounded and ravished nuclear reactor site.	The ministries of environment, health, civil defence, and agriculture.
Al-Basra	1.912.533	River pollution, radiation from the remnants of the army, the threat of an attack on an Iranian nuclear facility, sand storms, chemical and industrial accidents, terrorism, health epidemics, explosive remnants of war.	Cell operations in the provinces to prepare the response strategy. Recommending training courses on good practices in other countries.
Dohuk	505.491	Drought, earthquakes, pollution, conflicts, population displacement, fires, transport accidents, landslides.	The local government, non-governmental organisations, and civil society. A strong desire for training and development.
Diyala	1.560.621	Drought, floods, transport accidents, environmental pollution, health epidemics, swine flu, fire, unemployment, lack of adequate shelter, health epidemics, explosive remnants of war.	The local government and NGOs. An urgent need for more training.
Erbil	1.542.421	Drought, dust storms, transportation accidents, floods, displacement, epidemics.	The Kurdistan Regional Government Response. An urgent need for more training.
Karbala	887.858	Disasters caused by human activity, epidemics, dust storms, drought.	The emergency cells address crises including displacement and fires. There is a need for training to deal with other crises.
Maysan	824.127	Earthquakes, drought, health epidemics, accidents, terrorism, unrest, explosive remnants of war, dust storms.	Emergency cells in the provinces of local authorities, Environmental Council (Directorates managers in the province such as health, water, electricity, sanitation, agriculture, irrigation, municipal, traffic and education).
Al-Muthanna	614.997	Drought, environmental pollution, fires, dust storms, radiation resulting from the depleted uranium.	The Ministry of Water, Ministry of Irrigation, fire fighting. There is a need for technical knowledge in disaster risk reduction.
Al-Najaf	1.081.203	Drought, transport accidents, environmental pollution, civil conflicts, industrial accidents, and fires, dust storms.	Local authorities, civil defence, and the Iraqi Red Crescent Society, the International Committee of the Red Cross (ICRC). Civil society organisations are more receptive of the local government.
Ninawa	2.811.901	Drought, transport accidents, environmental pollution, civil conflicts, industrial accidents, fires, dust storms, collapse of dams, displacement.	
Al-Qadisiyah	990.483	Drought, epidemics, dust storms, internal conflicts.	UNICEF and other international non-governmental organisations.
Kirkuk	902.019	Explosions, terrorism, conflict, pollution, displacement, health issues, inappropriate sites for	Local authorities, non-governmental organisations, civil society, civil defence, health. There is a desire for more training and development.

		internally displaced people, drought, dust storms.	
Thi Qar	1.616.950	Drought, water pollution, pollution, displacement, animal diseases, buildings' combustion, the rapid outbreak of disasters, dust storms.	The province, civil defence, and the Iraqi Red Crescent Society, the Ministry of Environment, NGOs. The desire to exercise better preparedness and response as part of disaster risk reduction.
Salah AL-Dien	1.191.403	Floods, drought, dust storms, environmental pollution, chemical and industrial accidents, displacement.	Crisis cells in the provinces. Capacity building is preferred.
Sulaymaniyah	1.893.617	Population displacement, drought, health epidemics, earthquakes, the shelling from Turkey / Iran, terrorism, explosive remnants of war.	Central and local government, non-governmental organisations, the United Nations, the International Committee of the Red Cross (ICRC), there is a need for more training for employees.
Wasit	1.064.950	Drought, earthquakes, explosive remnants of war, torrents.	Require more knowledge and planning skills.

I.3 Hyogo Framework for Action 2013 – 2015 (HFA)

In order to build the resilience of nations and communities to disasters, the UNISDR generate a practical guide to provide guidance on conducting an effective review of the progress made in the implementation of the Hyogo Framework for Action 2005 – 2015. The Iraqi General Directorate of Civil Defence conducted a follow-up for its progress during three years (2013 – 2015).This follow-up revealed the overall challenges as illustrated below:

I.3.1 Overall Challenges (Planning Department, 2015)

- The weakness of community awareness.

- Increase the financial resources necessary for the implementation of risk reduction program.

- The weakness of the security and political stability.

- The need to allocate budgets for disaster management.

- The need for human and material capacity building.

- Non-inclusion of all society segments in capacity building.

- The concept of disaster management is a new idea and it needs a political support to include it in future programs and plans.

- Lack of study and documenting the previous experiences for the purpose of re-use in program development.

- Lack of allocations to the emergency division so that it does not have adequate resources to treat, as a preliminary intervention.

- The presence of red tape and a large number of committees in the fund allocating process.

- Limited attention has been given by organisations and institutions in terms of preparing disaster response plans.

I.3.2 Strengths

- School students and employees in organisations have been trained on the acts of the civil defence and how to behave in major incidents and emergencies.
- To raise awareness of the causes of disaster risk for all society segments, seminars and courses are carried out in the organisations and projects by the Environmental Protection police centres in Baghdad and the provinces.
- Studies have been prepared about the types of disasters and their consequences, and how to reduce their risks by Civil Defence Directorate staff.
- The General Directorate of Civil Defence is the most prominent team member in preparation of a framework for the disaster management strategy in Iraq.
- Workshops and training courses are held in first aid, rescue, evacuation, and disaster medicine to train staff of the Civil Defence Directorate to perform the duties mandated.
- There are disaster response plans in terms of practice and capacity building for the staff of the Directorate of Civil Defence. Training for such plans is conducted inside and outside Iraq.
- To organise work in the field of disaster management, the Directorate General of Civil Defence has Civil Defence Law No. (44) for the year 2013.
- There is an allocation in the budget of each administrative unit for emergency (crisis cell). This allocation contributes to ensure risk reduction resources and supports backing actors. Further, it helps in reducing risk size as well as human and material damage.
- There are studies submitted by researchers in universities or from those concerned with disasters. Such research was applied in the field of planning and in providing information which can be used.

I.3.3 Future Aspirations

- Create awareness programs geared to disaster risk reduction and mitigation.
- Necessary funds should be allocated to provide financial resources.

- Provide financial resources necessary for the implementation of risk reduction program which seeks to guarantee disaster mitigation.
- Propose determining the amount of emergency funds that can be easily allocated in emergency situations.
- Having an appropriate work environment.
- Speed up building capacities and competencies for those working in the field of disaster risk reduction.
- Involving all society segments in capacity building.
- Design new legislation to prepare plans and programs to reduce the potential for disaster risk.
- Develop mechanisms, procedures, and systems to save and disseminate data concerning hazard and recovery.

I.4 Main Themes of the Arab Strategy for Disaster Risk Reduction 2020 (Wehbe, 2013)

Based on the priorities of the Hyogo Framework for Action with regard to disaster risk reduction and by reference to the purpose of the Arab strategy for disaster risk reduction, five main themes of this strategy have been identified as follows:

1. **Strengthening the commitment to a comprehensive and integrated approach to disaster risk reduction in various sectors.**
   a. Inclusion of risk reduction considerations in national policies and plans and legal frameworks concerning all vital sectors related to the achievement of the Millennium Development Goals.
   b. The integration of climate change adaptation and mitigation actions in the development strategies.
   c. Ensure decentralisation for adequate resources allocated, community participation, collaboration with civil society and private sector groups at all stages of the planning, and implementation efforts to disaster management and risk reduction.
   d. Consider the regional forum and multi-sectoral national forums the main risk factors, as well as setting population priorities and the most vulnerable groups.
2. **The necessary capacity-building to identify, monitor, and assess disaster risk.**
   a. Ensure the availability of multiple risk assessments of national and local damage. Such risk assessments include key sectors with a focus on urban centres or settlements.

b. Ensure the provision of capacity and systems for monitoring, recording, and distribution of data related to basic risks and vulnerabilities at the regional, national and local level.
c. Ensure the inclusion of the data by type (data on gender) in risk assessments.
d. Intensify efforts to understand and assess the potential impacts of climate change in the regions and sectors vulnerable to climate risks.
e. The establishment of systems and networks of a regional early warning system for monitoring the multiple threats to the region.
f. Forming a network of regional experts on disaster risk management and related issues.

3. Building confrontational ability through knowledge, public advocacy, research, and training.

g. Work on the availability of risk and disaster events information at all levels and its accessibility by all parties concerned.
h. Ensure the use of educational materials and curricula and methodologies at the most recent level to take into account the contexts and realities of regional, national and local emerging risks.
i. Raising public awareness, launching campaigns and support activities to shed light on disaster risk reduction action, and disaster management practices with the participation of communities.
j. Creating regular opportunities for training and developing the skills of managers, decision-makers, and volunteers from the community, ensuring that women participate.
k. Ensure the flow of resources to support ongoing scientific research, which aims to find solutions that can be applied especially in the short and medium term.
l. Developing acceptable criteria and indicators to monitor the progress of risk reduction and clarify the benefits of investment in this area.

4. Inclusion of disaster risk reduction in emergency, response, preparedness, and recovery plans and operations.

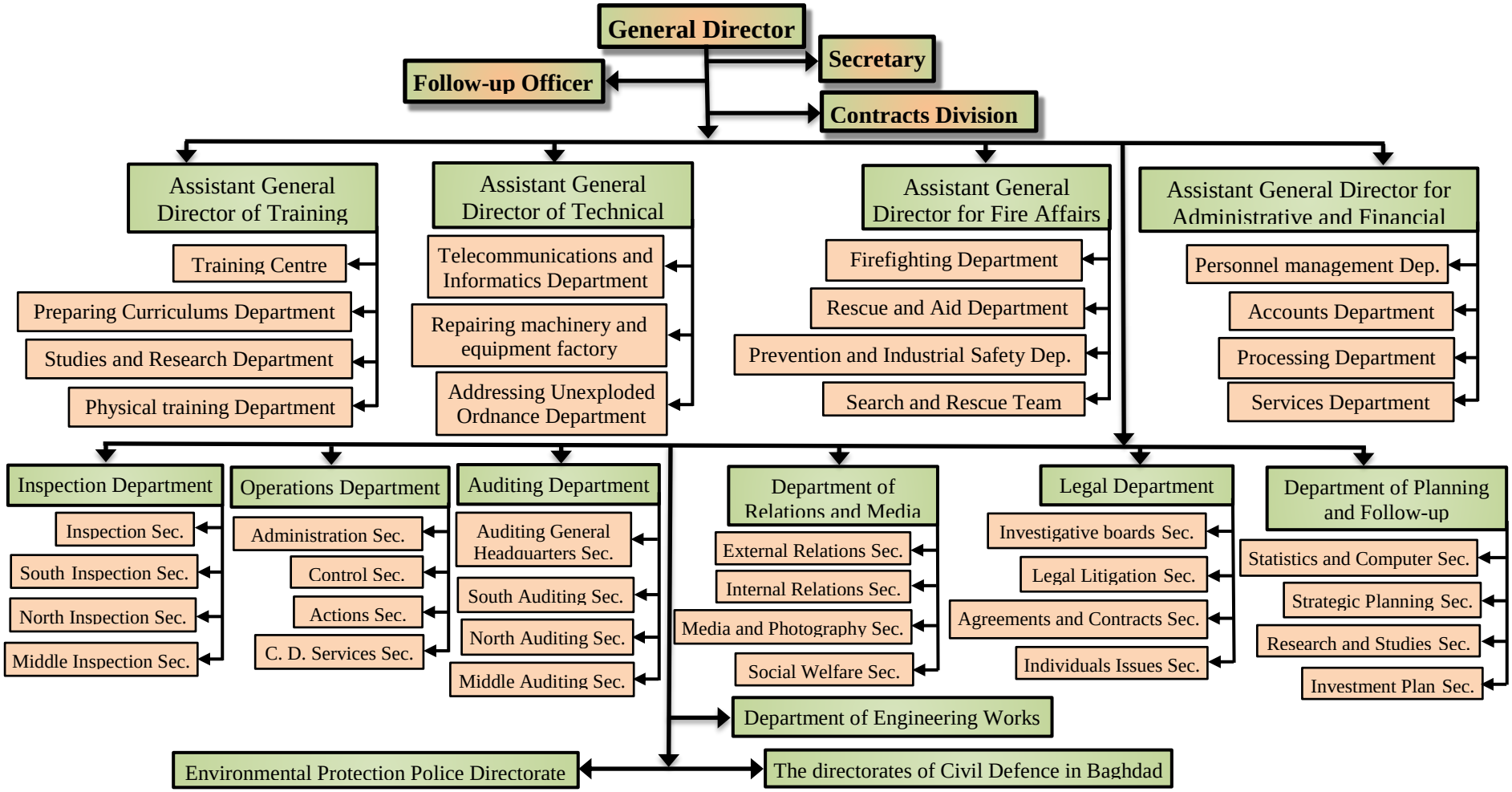
a. Propose a strong policy to build the technical and institutional capacity as well as to establish disaster management mechanisms.
b. Develop preparedness, precautionary, recovery, and reconstruction plans for disaster for all administrative levels as well as the involvement of all society sectors.
c. Create healthy support systems during an emergency that works to provide free health care to the victims and help in dealing with the mental health effects of disasters (and other long-term effects).

d. Ensure the availability of regional, national and local financial reserves and apply precautionary mechanisms that are known to all concerned parties to ensure an effective response and recovery when needed.
e. The integration of international quality standards in disaster response (SPHERE and IASC's guiding principles) (SPHERE PROJECT Humanitarian Charter and Minimum Standards in Humanitarian Response), (INTER-AGENCY STANDING COMMITTEE a durable solution for internally displaced persons).
f. Ensure the existence of necessary institutional capacity to conduct an assessment of damage and losses.
g. Strengthen cooperation between the Arab countries with respect to disaster response, preparedness, and recovery.

5. Improve accountability regarding disaster risk management at the local, national, and regional level.

a. Ensuring that the quasi-national and local strategies to risk reduction include long-term plans to improve capacity development to match with the sufficient budget allocation.
b. Implementation of plans and sectoral economic policies that limit the susceptibility of economic activities and basic services to deal with damage.
c. Developing legislation and procedures for evaluating the effects of disaster risk for major development projects, especially major infrastructure projects.
d. Include disaster risk reduction elements in urban planning and management of residential areas, including the application of the construction laws.
e. Analysing the existing and emerging financial mechanisms for disaster risk reduction as well as identifying and developing the most efficient means to fund and transfer risk.
f. Ensure the integration of disaster risk reduction measures in the recovery and rehabilitation processes post-disaster.

APPENDIX J THE ORGANISATIONAL STRUCTURE OF THE GENERAL DIRECTORATE OF CIVIL DEFENCE 2009



APPENDIX K INVITATION LETTER

Dear Sir/Madam,
My name is Hajer Al-Dahash. I contacted some of you July 2015 to carry out an interview regarding disaster response management stemming from war operations and terrorism in Iraq. Bearing in mind that I will have a fair conversation with you prior to the interview to make sure you are fully aware of the research.

I am contacting you now to conduct semi-structured interview to verify and validate the recommendations (see Appendix L please). It will be very much appreciated if you send me your availability for no more than 30 min interview in your convent time.

I would like to thank you positively for your collaboration and looking forward to hear from you.

Please note that I attached with this email a covering letter that includes background about the framework and the interviews' questions.
Sincerely,

APPENDIX L VALIDITY INTERVIEW GUIDELINES

Recommendations to enhance current administrative systems and practices in response to disaster, stemming from terrorism in Iraq

Brief description of human-made disasters in Iraq

Disasters, including human-made ones, are an ever-present threat and are occurring at an increasing rate worldwide. Continuing terrorist attacks worldwide are likely to sustain attention on disaster response management, particularly in Middle Eastern countries. Since 2003, Iraq has been experiencing an unprecedented series of damaging events. Increased attention has been given to the country's arrangements for disaster management by policymakers. Disaster response, which refers to actions taken both before, during and after an emergency, in order to ensure that effects are minimised and that people affected are given immediate attention, is one of the critical phases in the Disaster Management System life cycle. The focus of this study will be on disaster response management associated with the events caused by war operations and terrorism activities in Iraq.

This study aims to investigate the current practices related to disaster response management in Iraq with particular reference to war and terrorism. This exploration focuses on the achievement of the basic functions of the management operation (planning, organizing, directing, controlling). The evaluation of disaster response management is presented in terms of challenges, strengths and weaknesses and recommendations are suggested for effective disaster response management.

Interview Participants

The proposed participants represent the experts who are involved with disaster response teams. The identified participants include executives responsible for disaster response in the Iraqi General Directorate of Civil Defence.

Confidentiality

All data and information gathered shall be used for research purposes only with the informed consent of the organization involved and from the participants themselves.

Recommendations

Sets of recommendations have been suggested through the analysis of information obtained from the interviews and other sources of evidence collected, within the context of the research themes. The aim of such recommendations is to overcome or minimise the weaknesses and challenges faced by the current administrative systems and the response practices in order to enhance the overall process to effectively respond to disaster.

The sets of recommendations based on interviews, documents, and pertinent literature on disaster response management are presented below for validation, firstly to **check the appropriateness of the recommendation**, and secondly to check whether they are **classified appropriately under the different research themes**.

Research Themes الموضوعات البحثية	**Recommendations** التوصيات	**Experts remarks** تصريحات الخبراء
Endowment of Equipment, Tools, and Infrastructure الوقف من المعدات والأدوات والبنية التحتية	More use of sophisticated equipment and machines, including special heavy rescue equipment to enable the response process to become faster and easier. المزيد من استخدام المعدات والآلات المتطورة، بما في ذلك معدات الإنقاذ الثقيلة خاصة لتمكين عملية الاستجابة لتصبح أسرع وأسهل.	
	To link the directorates of civil defence with the e-government network for effective collaboration. ربط مديرية الدفاع المدني مع شبكة الحكومة الإلكترونية للتعاون الفعال.	
	To set up effective early warning systems in order to prevent crises before they occur and to get prepared to deal with inevitable crises. وضع نظم فعالة للإنذار المبكر من أجل منع وقوع الأزمات قبل حدوثها والاستعداد للتعامل مع الأزمات التي لا مفر منها.	
	To set up fire nozzles and security camera networks adhering to the required technical specifications. إعداد فوهات الحريق وشبكات الكاميرات الأمنية والتقيد بالمواصفات الفنية المطلوبة.	
	To develop telecommunications and informatics in the Iraqi provinces. تطوير قطاع الاتصالات والمعلوماتية في المحافظات العراقية.	
	To increase the number of modern civil defence centres. زيادة عدد مراكز الدفاع المدني الحديثة.	
	To complete the database in the Iraqi General Directorate of Civil Defence by using the most up to date and globally progressive GIS information systems. استكمال قاعدة البيانات في المديرية العامة للدفاع المدني العراقية باستخدام نظم المعلومات الجغرافيةGIS الحديثة والمتقدمة عالميا	
	To use the mobile network to spread early warning messages and vital information to citizens prior to a disaster and/or aftermath of a disaster. استخدام شبكة الهاتف النقال لنشر رسائل الإنذار المبكر والمعلومات الحيوية للمواطنين قبل وقوع كارثة و / أو أعقاب وقوع كارثة.	

	To invest in necessary technology and equipment, and build the technical capacity of organisations with early warning system and information dissemination functions. الاستثمار في التكنولوجيا والمعدات اللازمة، وبناء القدرات الفنية للمنظمات مع نظام الإنذار المبكر وظائف نشر المعلومات.	
Education about Disaster Risk التعليم حول مخاطر الكوارث	To provide continuous training for staff, of all levels, by intensifying external and internal training courses in the field of disaster response. توفير التدريب المستمر للموظفين، على جميع المستويات، من خلال تكثيف الدورات التدريبية الداخلية والخارجية في مجال الاستجابة للكوارث.	
	To reactivate some sections of civil defence Law No. 44 of 2013 to facilitate teaching civil defence in the curriculum. تفعيل بعض أقسام قانون الدفاع المدني رقم 44 لسنة 2013 لتسهيل تعليم الدفاع المدني في المناهج الدراسية.	
	To provide education at all stages (primary, secondary, higher) to increase knowledge and awareness of disaster risks. توفير التعليم في جميع المراحل (الابتدائي والثانوي والعالي) لزيادة المعرفة والوعي عن مخاطر الكوارث.	
	To educate the public through continuous communication, particularly through the media, to raise awareness about the role of civil defence in terms of disaster response. تثقيف الجمهور من خلال التواصل المستمر، وخاصة من خلال وسائل الإعلام، إلى رفع مستوى الوعي حول دور الدفاع المدني في مجال الاستجابة للكوارث.	
	To conduct joint exercises such as multifunctional exercises with the relevant organisations according to the emergency response plans. إجراء مناورات مشتركة مثل تمارين متعددة الوظائف مع المنظمات ذات الصلة وفقا لخطط الاستجابة للطوارئ.	
	To incorporate previous experience and global research on disasters when devising the response plan. دمج الخبرات السابقة والأبحاث العالمية عن الكوارث عند وضع خطة الاستجابة.	
	To conduct training and practices in decision-making. إجراء التدريب والممارسات في عملية صنع القرار.	
	To conduct a comprehensive risk assessment, to include vulnerability and available capacity at all levels and by multi-region. لإجراء تقييم شامل للمخاطر، لتشمل قابلية التأثر للمخاطر والقدرات المتاحة على جميع المستويات وفي مناطق متعددة.	
	Education and training must be both theoretical and practical with emphasis on the integration of the theory learned into practice through the use of simulation. ويجب أن يكون التعليم والتدريب نظريا وعمليا، مع التركيز على التكامل بين النظرية المكتسبة ووضعها موضع التنفيذ من خلال استخدام المحاكاة.	
	To improve the value of citizen response by preparing citizens for specific incidents triggered by terrorism through the provision of regular training, campaigns and skill development programmes. تحسين قيمة استجابة المواطن من خلال إعداد المواطنين لحوادث معينة ناجمة عن الإرهاب من خلال توفير التدريب المنتظم، وحملات وبرامج تنمية المهارات.	
	To emphasise inclusivity, especially of gender, when providing education. التأكيد على الشمولية او اشراك الجميع، خاصة من الجنسين، عند تقديم التعليم.	
	To enhance trust among the people towards the disaster responders. تعزيز الثقة بين الناس باتجاه المستجيبين للكوارث.	
	To update the organisational structure of the Iraqi General Directorate of Civil Defence regularly. تحديث الهيكل التنظيمي للمديرية العامة للدفاع المدني العراق باستمرار.	
	To eliminate favouritism, nepotism and bias in work environments. القضاء على المحسوبية والمحاباة والتحيز في بيئات العمل.	
	To increase the mobilization speed of the various relevant agencies in various organizations by updating and testing of inter institutional response. زيادة سرعة تعبئة/ حشد مختلف الجهات ذات العلاقة في مختلف المؤسسات عن طريق تحديث واختبار استجابة مؤسسية مشتركة.	
	To provide buildings with a specific location address such as a post code. توفيرعنوان الموقع المحدد للأبنية مثل الرمز البريدي.	

Coordination التنسيق	To strengthen cooperation between the Arab countries with respect to disaster response, preparedness, and recovery. تعزيز التعاون بين الدول العربية فيما يتعلق بالاستجابة للكوارث والتأهب، والانتعاش.	
	To develop a response strategy and implement institutional plans in the disaster response arena. وضع استراتيجية الاستجابة وتنفيذ الخطط المؤسسية في ساحة الاستجابة للكوارث.	
	To adapt new technologies that have emerged in recent years to enable better emergency response coordination, such as wireless mesh networks (CalMesh), sensor networks (ASPECT), knowledge management systems (RKBP), geographic information systems (CATS), communication standards (CAP), incident forecast and analysis programs (SLOSH), peer-to-peer communication platforms (Microsoft Groove), collaborative work systems (E-Team), and command and control systems (DisasterLAN). اعتماد التكنولوجيات الجديدة التي ظهرت في السنوات الأخيرة لتمكين تحسين تنسيق الاستجابة في حالات الطوارئ، مثل	
	Attention should be given to identify and coordinate organisational responsibilities. ينبغي إيلاء اهتمام لتحديد وتنسيق المسؤوليات التنظيمية.	
	To obtain disaster response expertise connecting groups in institutions. الحصول على مجموعات مترابطة من خبراء الاستجابة للكوارث في المؤسسات.	
	To adopt new frameworks in disaster response that promote coordination, flexibility, and rapid response in order to achieve institutional development. اعتماد أطر جديدة في الاستجابة للكوارث التي تعزز التنسيق والمرونة، والاستجابة السريعة من أجل تحقيق التنمية المؤسسية.	
	To create a sense of trust among the different stakeholders who are expected to work as a team. خلق شعور من الثقة بين مختلف أصحاب الشأن الذين يتوقع أن يعملوا كفريق واحد.	
Planning Process عملية التخطيط	Staff at all levels should be heard, consulted and cooperated with when making decisions about the response planning process. يجب أن يسمع، يستشار و يتعاون الموظفين على جميع المستويات عند اتخاذ قرارات بشأن عملية التخطيط للاستجابة.	
	To focus on disaster forecasting and monitoring. التركيز على التنبؤ بالكوارث ورصدها.	
	To prepare additional plans for different or unusual types of disaster. إعداد خطط إضافية لأنواع مختلفة أو غير عادية من الكارثة.	
	To conduct regular meetings with all the officers and staff members to improve the planning process based on their feedback and experience. عقد اجتماعات منتظمة مع جميع الضباط والموظفين لتحسين عملية التخطيط على أساس التغذية المرتدة وخبراتهم.	
	To develop a unified plan to respond to the disaster to improve the coordination between the authorities and the relevant organizations. وضع خطة موحدة للاستجابة للكوارث لتحسين التنسيق بين السلطات والمؤسسات ذات الصلة.	
	To develop mechanisms, procedures, and systems to save and disseminate data concerned with hazard and recovery. وضع آليات وإجراءات وأنظمة لحفظ ونشر البيانات المعنية بالمخاطر والتعافي.	
	To introduce legislation to prepare plans and programs to reduce the potential for disaster risk, as well as find appropriate work environments for staff. وضع تشريعات لإعداد خطط وبرامج للحد من احتمالات مخاطر الكوارث، وكذلك إيجاد بيئات عمل مناسبة للموظفين.	
	The availability of expertise must be taken into account when planning and preparing for a disaster. يجب أن تؤخذ بعين الاعتبار توافر الخبرات عند التخطيط والتحضير لكارثة.	
	To adopt a periodic review system of disaster management plans and test them in conditions similar to the actual situations of disaster and work to confront them. اعتماد نظام المراجعة الدورية لخطط إدارة الكوارث واختبارها في ظروف مماثلة لتلك الحالات الفعلية من الكوارث والعمل على مواجهتها.	
	To develop the plans by practicing, evaluating, and re-planning the plans in order to develop appropriately matched institutional responses and be able to determine the scale of disaster.	

	وضع الخطط من خلال ممارسة، تقييم، وإعادة تخطيط الخطط لتطوير الاستجابات المؤسسية بشكل مناسب و متطابق وان تكون قادرة على تحديد حجم الكارثة.	
	Planning should be "reality based", grounded in what is likely to happen rather than on myths and misconceptions long overturned by disaster research. عملية التخطيط يجب ان تكون "مستندة إلى الواقع"، ترتكز على ما يمكن أن يحدث وليس على الخرافات والمفاهيم الخاطئة التي أسقطت منذ فترة طويلة عن طريق البحوث في مجال الكوارث.	
	Unambiguous roles and responsibilities should be determined within disaster planning structures. ينبغي تحديد الأدوار والمسؤوليات لا لبس فيها داخل هياكل التخطيط لمواجهة الكوارث.	
Specialist Staff فريق العمل المتخصص	To increase the number of specialised technical staff with competence and experience, together with academic qualifications. زيادة عدد الموظفين الفنيين المتخصصين من ذوي الكفاءة والخبرة، جنبا إلى جنب مع المؤهلات الأكاديمية.	
Employees' Rights حقوق الموظفين	To employ motivated, competent and experienced staff in disaster response management. توظيف موظفين متحمسين ذوي كفاءة وخبرة في إدارة الاستجابة للكوارث.	
	To return to the previous system of daily working hours for civil defence centres - 24 hours on and 48 hours off. العودة إلى النظام السابق من ساعات العمل اليومية لمراكز الدفاع المدني - 24 ساعة عمل 48 ساعة راحة.	
	To improve the approval process to enable staff to complete their education and to have their vacation outside Iraq. تحسين عملية الحصول على الموافقات لتمكين الموظفين من استكمال تعليمهم والحصول على اجازاتهم خارج العراق.	
	To provide health insurance for staff. توفير التأمين الصحي للموظفين.	
	To conduct periodic medical examinations. إجراء الفحوص الطبية الدورية.	
	To replace employees who are unfit to work, by transferring them to the Social Welfare organisation or to the morning shift as administrators in civil defence centres. These staff could be replaced through the recruitment of new staff. استبدال الموظفين المصنفين طبيا الغير مؤهلين للعمل، من خلال تحويلهم إلى منظمة الرعاية الاجتماعية أو إلى المناوبة الصباحية كإداريين في مراكز الدفاع المدني. ويمكن الاستعاضة عن هؤلاء الموظفين من خلال تعيين موظفين جدد.	
Financial Resources الموارد المالية	To allocate budgets based on appropriate estimations. تخصيص الميزانيات على أساس تقديرات مناسبة.	
	To improve the mechanism to mobilize funds to the necessary departments on time. تحسين الآلية الخاصة بتحريك الأموال إلى الإدارات اللازمة في الوقت المناسب.	
	To make the availability of funds flexible depending on each emergency requirement. جعل توفر الأموال مرن اعتمادا على متطلبات الطوارئ.	
	To make funding authorization process more flexible through the removal of 'red tape'. جعل عملية ترخيص التمويل أكثر مرونة من خلال إزالة "الروتين".	
	To reduce the number of committees in the budget approval and authorization process. تقليص عدد اللجان الخاصة بعملية الموافقة على الميزانية والترخيص.	
	To ensure the availability of regional, national and local financial reserves and apply precautionary mechanisms that are known to all concerned parties. ضمان توافر الاحتياطيات المالية الإقليمية والوطنية والمحلية وتطبيق آليات وقائية معروفة لجميع الأطراف المعنية.	
	To analyse the existing and emerging financial mechanisms for disaster risk reduction. تحليل الآليات المالية القائمة والناشئة للحد من مخاطر الكوارث.	
	To increase the contingency reserve appropriations to 10% of the federal budget. Unused allocations may be rolled over to subsequent years in order to build up a reserve fund for response to large-scale disasters.	

	زيادة اعتمادات احتياطي الطوارئ إلى 10٪ من الموازنة الاتحادية. يمكن إرجاع المخصصات الغير مستخدمة لأكثر من سنة لاحقة من أجل بناء صندوق احتياطي للاستجابة للكوارث واسعة النطاق.	
Attention for Obligations الانتباه للالتزامات أو الواجبات	Attention should be given to disaster response rules and principles. يجب إعطاء الاهتمام لقواعد ومبادئ الاستجابة للكوارث.	
	To conduct daily inspection of the work requirements. إجراء التفتيش اليومي لمتطلبات العمل.	
	Operational groups should contribute in developing general policies and guidelines. يجب أن تسهم مجموعات تنفيذية في وضع السياسات والمبادئ التوجيهية العامة.	
Decision-Making اتخاذ القرار	To provide central leadership with flexibility in decision-making. توفير القيادة المركزية مع المرونة في اتخاذ القرارات.	
	To assess situations accurately and stop improvisational behaviour. تقييم الحالات بدقة ووقف السلوك الارتجالي.	
	New control techniques that adapt the principle of reward more than the principle of punishment might be needed to raise and sustain morale. الحاجة إلى تقنيات السيطرة الجديدة التي تتكيف مع مبدأ الثواب أكثر من مبدأ العقاب لرفع والمحافظة على الروح المعنوية.	
	Efficient and effective decision-making needs to be investigated and understood, learned, practiced, and effectively executed during the response. صنع القرار بكفاءة وفعالية يحتاج الى تحقق، فهم، تعلم، ممارسة، وتنفيذ فعال خلال الاستجابة.	
	To develop information and decision management competencies and procedures. تطوير كفاءات وإجراءات إدارة المعلومات والقرارات.	
	System versatility must be understood by decision makers at a high system level. يجب فهم تعددية الجوانب (طلاقة الحركة) للنظام من قبل صناع القرار على المستوى العالي للنظام.	
Law Activation تفعيل القانون	To activate all the decisions of the civil defence services under Law No. 64 of 1978 amended by Act 44 of 2013. تفعيل جميع القرارات لخدمات الدفاع المدني بموجب القانون رقم 64 لسنة 1978 المعدل بالقانون 44 لعام 2013	
	To improve clarity and transparency in the mechanisms of the declaration of an emergency. تحسين الوضوح والشفافية في آليات إعلان حالة الطوارئ.	
	To produce a unified national legal framework for disaster risk reduction and response. وضع إطار قانوني وطني موحد للحد من مخاطر الكوارث والاستجابة لها.	
	To update the structure of the ministries to reflect the laws and regulations of disaster management. تحديث هيكل الوزارات لتنعكس على قوانين وأنظمة إدارة الكوارث.	
Risk Assessment تقييم المخاطر	To identify, assess, and monitor all types of disaster risks, the priority of these risks according to its geographical distribution. تحديد وتقييم ورصد جميع أنواع مخاطر الكوارث، واعطاء الاولوية لهذه المخاطر وفقا للتوزيعها الجغرافي.	
	To ensure the availability of multiple risk assessments of national and local damage in areas including key sectors with a focus on urban centres or settlements. ضمان توافر تقييم المخاطر المتعددة للأضرار على الصعيدين الوطني والمحلي في مجالات تشمل القطاعات الرئيسية مع التركيز على المراكز الحضرية أو المستوطنات.	
	To ensure the existence of necessary institutional capacity to conduct an assessment of damage and loss. ضمان وجود القدرات المؤسسية اللازمة لإجراء تقييم الأضرار والخسائر.	
	To determine the scale and size of the disaster. تحديد نطاق وحجم الكارثة.	

Thank you for your time and cooperation. For any clarification and queries regarding this study, you can contact the researcher or the supervisor of the researcher as set out below:

PhD Researcher:

Hajer Al-Dahash

School of the Built Environment

Manchester M5 4WT

United Kingdom

Email: H.F.Al-Dahash@edu.salford.ac.uk

Telephone: +44161 295 6942 (UK)

Supervisor:

Dr. Udayangani Kulatunga

School of the Built Environment

Manchester M5 4WT

United Kingdom

Email: u.kulatunga@salford.ac.uk

Telephone: +441612956943 (UK)

REFERENCES

Urban Planning Department (2014)Abdel Hafez, A. M., & Abdul Sattar, M. A. Q. (2015). *The Basics of Fireman*. Iraq: Ministry of Interior.

Abosuliman, S. S., Kumar, A., & Alam, F. (2013). Disaster Preparedness and Management in Saudi Arabia: An Empirical Investigation. *International Journal of Social, Management, Economics and Business Engineering, 7*(12), 2022-2026.

Ahuja, H. N., Dozzi, S., & Abourizk, S. (1994). *Project management: techniques in planning and controlling construction projects* (2nd ed.). New York: John Wiley & Sons.

Aitken, P., & Leggat, P. (2012). Considerations in Mass Casualty and Disaster Management. In M. Blaivas (Ed.), *Emergency Medicine – An International Perspective* (pp. 143-182). doi:10.5772/37361

Al-Dahash, H., Al-Shammari, S., Kulatunga, U., & Hardman, M. (2017). *Cloud computing for disaster response management stemming from terrorism in Iraq.* Paper presented at the International Postgraduate Research Conference (IPGRC), 14-15 September, 2017, University of Salford, UK, pp. 295-306.

Al-Dahash, H., & Kulatunga, U. (2015). *Review of Disaster Response Management Challenges from War Operations and Terrorism in Iraq.* Paper presented at the The 5th International Conference on Building Resilience, Newcastle, New South Wales, Australia 15th - 17th July 2015, pp. 1-13.

Al-Dahash, H., & Kulatunga, U. (2017). *Evaluating disaster response management stemming from war operations and terrorism in Iraq: a methodological approach.* Paper presented at the 13th International Postgraduate Research Conference (IPGRC), 14-15 September, 2017, University of Salford, UK, pp. 466-477.

Al-Dahash, H., Kulatunga, U., & Al-Dehesh, A. (2015). *Disaster Response Management Stemming From War Operation and Terrorism in Iraq.* Paper presented at the 12th International Post-Graduate Research Conference, 10-12 June 2015, MediaCity, UK, pp. 432-444.

Al-Dahash, H., Kulatunga, U., & Amaratunga, D. (2014). *Evaluation of the System of Disaster Management Resulting from War Operations and Terrorism in Iraq.* Paper presented at the 4th International Conference on Building Resilience, Incorporating the 3rd Annual Conference of the ANDROID Disaster Resilience Network, 8th – 11th September 2014, Salford Quays, United Kingdom, pp. 900-907.

Al-Dahash, H., Thayaparan, M., & Kulatunga, U. (2016a). *Challenges during disaster response planning resulting from war operations and terrorism in Iraq.* Paper presented at the 12th International Conference of the International Institute for Infrastructure Resilience and Reconstruction (IIIRR), August 5-7, 2016, Kandy, Sri Lanka, pp. 87-95.

Al-Dahash, H., Thayaparan, M., & Kulatunga, U. (2016b). *Understanding the Terminologies: Disasters, Crisis, and Emergency.* Paper presented at the 32nd Annual ARCOM Conference, 5-7 September 2016, Manchester, UK, pp. 1191-1200.

Altay, N., & Green III, W. G. (2006). OR/MS Research in Disaster Operations Management. *European Journal of Operational Research, 175*(1), 475-493.

Amaratunga, D., Baldry, D., Sarshar, M., & Newton, R. (2002). Quantitative and qualitative research in the built environment: application of "mixed" research approach. *Work study, 51*(1), 17-31.

Arora, R., & Arora, P. (2013). *Disaster management: Medical preparedness, response and homeland security*. UK: CABI.

Avison, D. E., Lau, F., Myers, M. D., & Nielsen, P. A. (1999). Action research. *Communications of the ACM, 42*(1), 94-97.

Baharin, S. S. K., Shibghatullah, A. S., & Othman, Z. (2009). Disaster Management in Malaysia: An Application Framework of Integrated Routing Application for Emergency Response Management System. In N. S. Herman, S. M. Shamsuddin, & A. Abraham (Eds.), *International Conference of Soft Computing and Pattern Recognition. SOCPAR'09. 4-7 December 2009* (pp. 716-719). Melaka, Malaysia: IEEE.

Baker, D., & Refsgaard, K. (2007). Institutional development and scale matching in disaster response management. *Ecological Economics, 63*(2), 331-343.

Banipal, K. (2006). Strategic approach to disaster management: lessons learned from Hurricane Katrina. *Disaster Prevention and Management, 15*(3), 484-494.

Barbarosoğlu, G., & Arda, Y. (2004). A Two-Stage Stochastic Programming Framework for Transportation Planning in Disaster Response. *Journal of the Operational Research Society, 55*(1), 43-53.

Barenbaum, S. (N.D.). Top Five Critical Mistakes in Emergency Communications. Retrieved from http://www.disaster-resource.com/articles/07p_150.shtml

Baris, M. (2009). Effectiveness of Turkish Disaster Management System and Recommendations. *Biotechnology & Biotechnological Equipment, 23*(3), 1391-1398.

Batho, S., Williams, G., & Russell, L. (1999). Crisis management to controlled recovery: The emergency planning response to the bombing of Manchester City Centre. *Disasters, 23*(3), 217-233.

Belardo, S., Karwan, K. R., & Wallace, W. A. (1984). Managing the response to disasters using microcomputers. *Interfaces, 14*(2), 29-39.

Bevere, L., Sharan, R., & K S, V. (2016). *Natural catastrophes and man-made disasters in 2015*. Zurich, Switzerland: Economic Research & Consulting.

Bharosa, N., Lee, J., & Janssen, M. (2010). Challenges and obstacles in sharing and coordinating information during multi-agency disaster response: Propositions from field exercises. *Information Systems Frontiers, 12*(1), 49-65.

Biswas, B. C., & Choudhuri, S. K. (2012). Digital Information Resources for Disaster Management of Libraries and Information Centres. *Bangladesh Journal of Library and Information Science, 2*(1), 12-21.

Blessing, L. T., & Chakrabarti, A. (2009). *DRM, a design research methodology*. London: Springer.

Boin, A., & Hart, P. t. (2003). Public leadership in times of crisis: mission impossible? *Public Administration Review, 63*(5), 544-553.

Boin, A., Hart, P. T., McConnell, A., & Preston, T. (2010). Leadership style, crisis response and blame management: The case of Hurricane Katrina. *Public Administration, 88*(3), 706-723.

Burling, W. K., & Hyle, A. E. (1997). Disaster preparedness planning: policy and leadership issues. *Disaster Prevention and Management, 6*(4), 234-244.

Busch, C., De Maret, P. S., Flynn, T., Kellum, R., Le, S., Meyers, B., . . . Palmquist, M. (1994-2012). Content analysis. Writing@CSU. Colorado State University. Retrieved from http://writing.colostate.edu/guides/guide.cfm?guideid=61

Bush, K., & Duggan, C. (2015). *Evaluation in the extreme: research, impact and politics in violently divided societies*. New Delhi, India: SAGE Publications.

Cardona, O. D. (2005). *Indicators of Disaster Risk and Risk Management: Program for Latin America and the Caribbean: Summary Report*. Washington, DC: Inter-American Development Bank, Sustainable Development Department, Environment Division.

Carpenter, M., Bauer, T., & Erdogan, B. (2010). *Principles of Management.* Retrieved from http://catalog.flatworldknowledge.com/bookhub/reader/6?e=fwk-127512-ch01_s03

Carreño, M., Cardona, O., & Barbat, A. (2005). *Evaluation of the risk management performance.* Paper presented at the Proceedings of the International Conference: 250th Anniversary of the 1755 Lisbon earthquake. Lisbon.

Carreño, M. L., Cardona, O. D., & Barbat, A. H. (2007). A disaster risk management performance index. *Natural Hazards, 41*(1), 1-20.

Carrillo, G., Maama, T., Kaputu, E., Malua-Amosa, P., Kerslake, M., Brown, L., . . . Sowe, M. (n.d.). *Introduction to Disaster Management: Course Manual*. Vancouver, BC: Virtual University for Small States of the Commonwealth.

Cavdur, F., Kose-Kucuk, M., & Sebatli, A. (2016). Allocation of temporary disaster response facilities under demand uncertainty: An earthquake case study. *International Journal of Disaster Risk Reduction, 19*, 159-166.

Chen, L. C., Wu, J. Y., & Lai, M. J. (2006). The evolution of the natural disaster management system in Taiwan. *Journal of the Chinese Institute of Engineers, 29*(4), 633-638.

Chen, R., Sharman, R., Chakravarti, N., Rao, H. R., & Upadhyaya, S. J. (2008). Emergency response information system interoperability: development of chemical incident response data model. *Journal of the Association for Information Systems, 9*(3/4), 200-230.

Chen, R., Sharman, R., Rao, H. R., & Upadhyaya, S. J. (2008). Coordination in emergency response management. *Communications of the ACM, 51*(5), 66-73.

Cole, G. A. (2004). *Management Theory and Practice* (6th ed.). London: Cengage Learning EMEA.

Cole, G. A., & Kelly, P. (2011). *Management Theory and Practice* (7th ed.): Cengage Learning EMEA, London, UK

Coles, E., & Buckle, P. (2004). Developing community resilience as a foundation for effective disaster recovery. *Australian Journal of Emergency Management, 19*(4), 6-15.

College of Policing. (2016). Response and recovery. *Civil emergencies.* Retrieved from https://www.app.college.police.uk/app-content/civil-emergencies/civil-contingencies/response-and-recovery/

Collins, J., & Hussey, R. (2009). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. New York: Palgrave Macmillan.

Collis, J., & Hussey, R. (2013). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. New York: Palgrave Macmillan.

Comfort, L. K. (2002). Managing intergovernmental responses to terrorism and other extreme events. *Publius: The Journal of Federalism, 32*(4), 29-50.

Comfort, L. K. (2007). Crisis management in hindsight: Cognition, communication, coordination, and control. *Public Administration Review, 67*(Special Issue), 189-197.

Comfort, L. K., & Haase, T. W. (2006). Communication, Coherence, and Collective Action the Impact of Hurricane Katrina on Communications Infrastructure. *Public Works management & policy, 10*(4), 328-343.

Comfort, L. K., & Kapucu, N. (2006). Inter-organizational coordination in extreme events: The World Trade Center attacks, September 11, 2001. *Natural Hazards, 39*(2), 309-327.

Comfort, L. K., Ko, K., & Zagorecki, A. (2003). *Modeling fragility in rapidly evolving disaster response systems* Retrieved from http://escholarship.org/uc/item/1cz8w6gk

Comfort, L. K., Ko, K., & Zagorecki, A. (2004). Coordination in rapidly evolving disaster response systems the role of information. *American Behavioral Scientist, 48*(3), 295-313.

Committee 101. (2010). *Draft of a National Strategy for Disaster Management in Iraq, Unpublished Manuscript, Committee 101 Report*. The Republic of Iraq / Ministry of Science and Technology / Secretarial Committee. Baghdad, Iraq.

Coppola, D. P. (2011). *Introduction to International Disaster Management* (2nd ed.). Burlington, Mass.: Elsevier.

Coppola, D. P. (2015). *Introduction to International Disaster Management* (3rd ed.). Oxford: Butterworth-Heinemann.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed.). London: Sage.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice, 39*(3), 124-130.

Davies, K. (2005). Disaster preparedness and response: more than major incident initiation. *British Journal of Nursing, 14*(16), 868-871.

Denscombe, M. (2010). *The Good Research Guide: For Small-Scale Social Research Projects: For small-scale social research projects*. Maidenhead: McGraw-Hill International.

Desforges, J. F., & Waeckerle, J. F. (1991). Disaster planning and response. *New England Journal of Medicine, 324*(12), 815-821.

Deshmukh, R., Rodrigues, L. L., & Krishnamurthy, G. (2008). Earthquake risk and knowledge management. *Journal of Knowledge Management Practice, 9*(3).

Dey, B., & Singh, R. B. (2006). *Natural hazards and disaster management*. Delhi: The Secretary, Central Board of Secondary Education.

Dickson, E., Baker, J. L., Hoornweg, D., & Tiwari, A. (2012). *Urban risk assessments: understanding disaster and climate risk in cities*. Washington, DC: World Bank Publications.

Dixon, R. (2003). *The management task* (3rd ed.). London: Elsevier.

Dooley, L. M. (2002). Case Study Research and Theory Building. *Advances in developing human resources, 4*(3), 335-354. doi:10.1177/1523422302043007

Easterby-Smith, M., Thorpe, R., & Jackson, P. (2008). *Management Research: Theory and Practice* (3rd ed.). London: Sage.

Emanuele, L., Cristina, M., & Giovanni, R. (2009). Disaster management: findings from a systematic review. *Disaster Prevention and Management, 18*(2), 117-136. doi:10.1108/09653560910953207

Emergency Management Australia. (2004). *Emergency Planning: Manual 43*. Dickson, ACT: Emergency Management Australia.

Eyre, A. (2006). *Literature and best practice review and assessment: identifying people's needs in major emergencies and best practice in humanitarian response*. London: Department for Culture, Media and Sport.

Faulkner, B. (2001). Towards a framework for tourism disaster management. *Tourism Management, 22*(2), 135-147.

Federal Emergency Management Agency. (2015). *Operational Lessons Learned in Disaster Response*. Retrieved from USA:

FEMA. (2005). *Decision Making and Problem Solving: Independent Study* Washington, DC: US Department of Homeland Security.

Ferdinand, I., O'Brien, G., O'Keefe, P., & Jayawickrama, J. (2012). The Double Bind of Poverty and Community Disaster Risk Reduction: A Case Study from the Caribbean. *International Journal of Disaster Risk Reduction, 2*, 84-94.

Fiedrich, F., Gehbauer, F., & Rickers, U. (2000). Optimized resource allocation for emergency response after earthquake disasters. *Safety Science, 35*(1), 41-57. doi:10.1016/S0925-7535(00)00021-7

Filkins, D. (2017, January 9). A Bigger Problem Than ISIS?, Article *The New Yorker*. Retrieved from http://www.newyorker.com/magazine/2017/01/02/a-bigger-problem-than-isis

Fischer, H. W. (1998). *Behavioral Response to Chemical and Biological Terrorism: Sociological Observations Extrapolated from the Disaster Research Literature*. Church Falls, Virginia: Research Planning, Inc.

Fischer, H. W. (2005). The Danger in Over-Reacting to Terrorism: Has the US Embarked upon a Road that Should Have Remained Less Traveled? *Disaster Prevention and Management, 14*(5), 657-665.

Fischer, H. W. (2008). *Response to disaster: Fact versus fiction & its perpetuation: The sociology of disaster* (3rd ed.). USA: University Press of America.

Fisher, D. (2007). Domestic regulation of international humanitarian relief in disasters and armed conflict: a comparative analysis. *International Review of the Red Cross, 89*(866), 345-372.

Frykberg, E. R., & Tepas 3rd, J. (1988). Terrorist bombings. Lessons learned from Belfast to Beirut. *Annals of surgery, 208*(5), 569-576.

Furedi, F. (2007). The changing meaning of disaster. *Area, 39*(4), 482-489.

General Directorate of Civil Defence. (2016). *Internal Statistics, Unpublished Manuscript*. Iraqi Ministry of Interior. Iraq, Baghdad.

George, S. M., Zhou, W., Chenji, H., Won, M., Lee, Y. O., Pazarloglou, A., . . . Barooah, P. (2010). DistressNet: a wireless ad hoc and sensor network architecture for situation management in disaster response. *IEEE Communications Magazine, 48*(3), 128-136.

Gerring, J. (2007). *Case study research: principles and practices*. New Yourk, USA: Cambridge University Press.

Gibbert, M., Ruigrok, W., & Wicki, B. (2008). What Passes as a Rigorous Case Study? *Strategic Management Journal, 29*(13), 1465-1474.

Godschalk, D. R. (1991). Disaster mitigation and hazard management. In T. E. Drabek & G. J. Hoetmer (Eds.), *Emergency management: Principles and practice for local government* (pp. 131-160). Washington: DC:ICMA.

Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative report, 8*(4), 597-606.

Goodyear, E. J. (2009). *The State of Disaster Risk Reduction In Iraq*. New York: UNDP/OCHA.

Gospodinov, E., & Burnham, G. (2008). *Public Health Guide for Emergencies* (2nd ed.). Baltimore, MD: Johns Hopkins and Red Cross.

Greiving, S., Fleischhauer, M., & Wanczura, S. (2006). Management of natural hazards in Europe: the role of spatial planning in selected EU member states. *Journal of Environmental Planning and Management, 49*(5), 739-757.

Greiving , S., Pratzler-Wanczura, S., Sapountzaki, K., Ferri, F., Grifoni, P., Firus, K., & Xanthopoulos, G. (2012). Linking the actors and policies throughout the disaster management cycle by" Agreement on Objectives"–a new output-oriented management approach. *Natural Hazards and Earth System Science, 12*(4), 1085-1107.

GSMA. (2012). *Disaster Response: Guidelines for Establishing Effective Collaboration between Mobile Network Operators and Government Agencies.* UK: GSMA.

Guha-Sapir, D., Hoyois, P., & Below, R. (2016). *Annual disaster statistical review 2015: The Numbers and Trends*. Brussels, Belgium: Centre for Research on the Epidemiology of Disasters.

Hafez, M. M. (2006). Suicide terrorism in Iraq: A preliminary assessment of the quantitative data and documentary evidence. *Studies in Conflict & Terrorism, 29*(6), 591-619.

Haigh, R., & Amaratunga, D. (2010). An integrative review of the built environment discipline's role in the development of society's resilience to disasters. *International Journal of Disaster Resilience in the Built Environment, 1*(1), 11-24.

Hale, J. E., Dulek, R. E., & Hale, D. P. (2005). Crisis Response Communication Challenges Building Theory From Qualitative Data. *Journal of Business Communication, 42*(2), 112-134.

Handmer, J. (2008). Emergency management thrives on uncertainty. In G. Bammer & M. Smithson (Eds.), *Uncertainty and risk: Multidisciplinary perspectives* (pp. 231-243). London: Earthscan.

Handmer, J., & Parker, D. (1991). British disaster planning and management: An initial assessment. *Disasters, 15*(4), 303-317.

Harding, S. (2007). Man-made disaster and development The case of Iraq. *International Social Work, 50*(3), 295-306.

Hayat, E., & Amaratunga, D. (2014). *The Impact of the Local Political and Socio-Economic Condition to the Capacity of the Local Governments in the Maintenance of Post-Disaster Road Infrastructure Reconstruction Assets.* Paper presented at the 4th International Conference on Building Resilience, Building Resilience 2014, 8-10 September 2014, Salford Quays, United Kingdom, pp. 718-726.

Helbing, D., Ammoser, H., & Kühnert, C. (2006). Disasters as extreme events and the importance of network interactions for disaster response management *Extreme events in nature and society* (pp. 319-348). New York: Springer.

Helsloot, I., & Ruitenberg, A. (2004). Citizen response to disasters: a survey of literature and some practical implications. *Journal of Contingencies and Crisis Management, 12*(3), 98-111.

Henstra, D. (2010). Evaluating local government emergency management programs: what framework should public managers adopt? *Public Administration Review, 70*(2), 236-246.

Hills, A. E. (1994). Co-ordination and disaster response in the United Kingdom. *Disaster Prevention and Management, 3*(1), 66-71.

Hofmann, M., Betke, H., & Sackmann, S. (2015). Process-oriented disaster response management: A structured literature review. *Business Process Management Journal, 21*(5), 966-987. doi:10.1108/BPMJ-07-2014-0069

Hood, C., & Jackson, M. (1992). The new public management: a recipe for disaster? *Hazard Management and Emergency Planning: Perspectives In Britain* (pp. 109-125). New York: James and James Science Publishers Ltd.

Hughey, E. P. (2008). *A longitudinal study: The impact of a comprehensive emergency management system on disaster response in the commonwealth of the Bahamas.* (PhD Thesis), University of South Florida, Tampa, FL.

Humayun, S., & Al-Abyadh, I. R. (2014). *Iraq: Country Case Study Report - How Law and Regulation Support Disaster Risk Reduction*. New York: International Federation of Red Cross and Red Crescent Societies (IFRC).

Humayun, S., & Al-Abyadh, I. R. (N.D.). *Disaster Risk Reduction: Legal & Institutional Framework in Iraq*. Retrieved from Geneva:

IFRC. (2017). About disaster management Retrieved from http://www.ifrc.org/en/what-we-do/disaster-management/about-disaster-management/

International Federation of Red Cross and Red Crescent Societies. (2003). Types of disasters. Retrieved February 2003, from www.ifrc.org

International Federation of Red Cross and Red Crescent Societies. (2007). *Disaster response and contingency planning guide*. Geneva, Switzerland: IFRC.

International Risk Governance Council. (2009). *Risk Governance Deficits – An analysis and illustration of the most common deficits in risk governance*. Geneva: IRGC.

Iraqi Government. (2011). *Law No. 18 of 2011 Concerning Service and Retirement of the Internal Security Forces.* Retrieved from http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=91412

Iyer, V., & Mastorakis, Nikos E. (2006). Important elements of disaster management and mitigation and design and development of a software tool. *Wseas Transactions on Environment and Development, 2*(4), 263-282.

Jahangiri, K., Izadkhah, Y. O., & Tabibi, S. J. (2011). A comparative study on community-based disaster management in selected countries and designing a model for Iran. *Disaster Prevention and Management, 20*(1), 82-94.

Jenkins, B. A. (2001). 30 years and counting (pp. 1-3): US Government Printing Office.

Jenson, E. (1997). *Disaster management ethics*. New York: UN. Disaster Management Training Programme (DMTP).

Jones, G. R., & George, J. M. (2003). *Contemporary Management* (3rd ed.). New York: McGraw-Hill/Irwin

Kagioglou, M., Cooper, R., Aouad, G., Hinks, J., Sexton, M., & Sheath, D. (1998). *Final report: Generic design and construction process protocol*. Salford: University of Salford.

Kamel, N., & Wachs, M. (1996). Decision-Making After Disasters: Responding to the Northridge Earthquake. *ACCESS Magazine, 8*, 24-29.

Kapucu, N., & Garayev, V. (2011). Collaborative decision-making in emergency and disaster management. *International Journal of Public Administration, 34*(6), 366-375.

Keefer, P. (2009). Conflict and disaster. *Washington, DC: World Bank*.

Koehler, G. A., Kress, G. G., & Miller, R. L. (2014). What Disaster Response Management Can Learn From Chaos Theory. In A. Farazmand (Ed.), *Crisis and Emergency Management: Theory and Practice* (2nd ed., pp. 111-130). Boca Raton, FL: CRC Press.

Koontz, H., & O'donnell, C. (1955). *Principles of Management: An Analysis of Managerial Functions*. New York: McGraw-Hill.

Kovel, J. P. (2000). Modeling disaster response planning. *Journal of Urban Planning and Development, 126*(1), 26-38.

Krackhardt, D., & Stern, R. N. (1988). Informal networks and organizational crises: An experimental simulation. *Social Psychology Quarterly, 51*(2), 123-140.

Krippendorff, K. (2012). *Content analysis: An introduction to its methodology* (2nd ed.). Thousand Oaks, California: SAGE Publications Inc.

Kulatunga, U. (2008). *Influence of Performance Measurement Towards Construction Research and Development.* (PhD Thesis), The University of Salford, Salford, UK.

Kulatunga, U., Amaratunga, D., & Haigh, R. (2007). *Structuring the unstructured data: the use of content analysis.* Paper presented at the Proceeding of 6th International Postgraduate Conference in the Built and Human Environment, 27th-28th March 2007, Salford, UK, pp. 498–509.

Kumar, R. (2011). *Research Methodology - a Step-by-Step Guide for Beginners* (3rd ed.). London: Sage.

Lai, A. Y., He, J. A., Tan, T. B., & Phua, K. H. (2009). A proposed ASEAN disaster response, training and logistic centre enhancing regional governance in disaster management. *Transition Studies Review, 16*(2), 299-315.

Larson, R. C., Metzger, M. D., & Cahn, M. F. (2006). Responding to emergencies: lessons learned and the need for analysis. *Interfaces, 36*(6), 486-501.

LeClerc, C. (2015). *Are disaster response plans used during the initial phase of a disaster response: A case study of the implementation of the sheltering plan during Hurricane Sandy.* (MSc Thesis), California State University, Long Beach.

Leifer, R., & Mills, P. K. (1996). An information processing approach for deciding upon control strategies and reducing control loss in emerging organizations. *Journal of Management, 22*(1), 113-137.

Lemyre, L., Clément, M., Corneil, W., Craig, L., Boutette, P., Tyshenko, M., . . . Krewski, D. (2005). A psychosocial risk assessment and management framework to enhance response to CBRN terrorism threats and attacks. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science, 3*(4), 316-330.

Lettieri, E., Masella, C., & Radaelli, G. (2009). Disaster management: findings from a systematic review. *Disaster Prevention and Management, 18*(2), 117-136.

Lindell, M. K. (2013). Disaster studies. *Current Sociology, 61*(5/6), 797-825.

Lindell, M. K., & Perry, R. W. (2001). Community innovation in hazardous materials management: Progress in implementing SARA Title III in the United States. *Journal of Hazardous Materials, 88*(2), 169-194.

Lindell, M. K., Prater, C. S., Perry, R. W., & Nicholson, W. C. (2006). *Fundamentals of Emergency Management*. Washington, DC: FEMA.

Lindell, M. K., Whitney, D. J., Futch, C. J., & Clause, C. S. (1996). The local emergency planning committee: A better way to coordinate disaster planning. *Disaster management in the US and Canada: The politics, policymaking, administration and analysis of emergency management, 101*, 234-249.

Ljungholm, D. (2014). The Pervasiveness of Red Tape in Public Organizations. *Geopolitics, History and International Relations, 6*(1), 117-122.

Lynn, M. (2016). *Mass casualty incidents*. New York, USA: Springer.

Madry, S. (2015). *Space Systems for Disaster Warning, Response, and Recovery*. New York: Springer.

Magrabi, A. M. (2011). *Building responsive capability for disaster management: an empirical study of the Saudi Civil Defence Authority.* (PhD Thesis), University of Bradford, Bradford.

Majchrzak, A., Jarvenpaa, S. L., & Hollingshead, A. B. (2007). Coordinating expertise among emergent groups responding to disasters. *Organization Science, 18*(1), 147-161.

Manoj, B. S., & Baker, A. H. (2007). Communication challenges in emergency response. *Communications of the ACM, 50*(3), 51-53.

May, J., Colbert, D., Rea, S., Wood, F., & Nara-Venkata, R. (2015). Preparedness and training in staff responding to a burns disaster. *British Journal of Nursing, 24*(18), 918-923. doi:10.12968/bjon.2015.24.18.918

May, P. J., Workman, S., & Jones, B. D. (2008). Organizing attention: Responses of the bureaucracy to agenda disruption. *Journal of Public Administration Research and Theory, 18*(4), 517-541.

McEntire, D. A. (2015). *Disaster Response and Recovery: Strategies and Tactics for Resilience* (2nd ed.). Hoboken, New Jersey: John Wiley & Sons.

McLafferty, S. L. (2003). Conducting questionnaire surveys. In N. Clifford, M. Cope, T. Gillespie, & S. French (Eds.), *Key methods in geography* (pp. 129-142). London: SAGE.

McLoughlin, D. (1985). A framework for integrated emergency management. *Public Administration Review, 45*(Special Issue), 165-172.

Meissner, A., Luckenbach, T., Risse, T., Kirste, T., & Kirchner, H. (2002). *Design Challenges for an Integrated Disaster Management Communication and Information System.* Paper presented at the First IEEE Workshop on Disaster Recovery Networks (DIREN 2002), June 24, 2002, New York City, co-located with IEEE INFOCOM 2002, New York City.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis : an expanded sourcebook* (2nd ed.). London: SAGE.

Miller, L. M. (2007). Collective disaster responses to Katrina and Rita: Exploring therapeutic community, social capital, and social control. *Southern Rural Sociology, 22*(2), 45-63.

Miron, C. H., & Cernuşca, L. (2008). The impact of terrorist attacks upon the global economy. *Impact Strategic*(1), 65-69.

Moe, T. L., & Pathranarakul, P. (2006). An integrated approach to natural disaster management: public project management and its critical success factors. *Disaster Prevention and Management, 15*(3), 396-413.

Mohammadfam, I., Bastani, S., Esaghi, M., Golmohamadi, R., & Saee, A. (2015). Evaluation of coordination of emergency response team through the social network analysis. Case study: Oil and gas refinery. *Safety and Health at Work, 6*(1), 30-34.

Money, W. H., & Harrald, J. R. (1995). *The application of group support systems to knowledge acquisition for disaster response planning.* Paper presented at the Proceedings of the Twenty-Eighth Hawaii International Conference on System Sciences, 3-6 th Jan, Hawaii, USA, pp. 468-474.

MSG Experts. (2008). Management Study Guide. Retrieved from http://www.managementstudyguide.com/motivation_incentives.htm

Muaafa, M., Concho, A. L., & Ramirez-Marquez, J. (2014). Emergency Resource Allocation for Disaster Response: An Evolutionary Approach. *SSRN, 2848892*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2848892

Myers, M. D. (2013). *Qualitative research in business and management* (2nd ed.). Croydon: Sage.

Naylor, J. (2004). *Management* (2nd ed.). London: Pearson Education.

Nazarov, E. (2011). *Emergency Response Management in Japan: Final Research Report*. Kobe, Japan: Asian Disaster Reduction Center.

Nolte, I. M., & Boenigk, S. (2013). A study of ad hoc network performance in disaster response. *Nonprofit and Voluntary Sector Quarterly, 42*(1), 148-173

Ogasawara, J., Tanimoto, K., Imaichi, O., & Yoshimoto, M. (2014). Disaster prevention and response support solutions. *Hitachi Review, 63*(5), 236-243.

Onwuegbuzie, A. J., & Teddlie, C. (2003). *A framework for analyzing data in mixed methods research*. Thousand Oaks, California, USA: Sage.

Oxford University Press. (2004). *A Dictionary of Computing* Retrieved from http://www.encyclopedia.com/computing/dictionaries-thesauruses-pictures-and-press-releases/

Paffenholz, T. (2005). Peace and Conflict Sensitivity in International Cooperation. An Introductory Overview. *Internationale Politik und Gesellschaft*(4/2005), 63-82.

Palliyaguru, R., Amaratunga, D., & Haigh, R. (2013). Developing an approach to assess the influence of integrating disaster risk reduction practices into infrastructure reconstruction on socio-economic development. *Disaster Prevention and Management, 22*(2), 160-171.

Panzer, A. M., Butler, A. S., & Goldfrank, L. R. (2003). *Preparing for the Psychological Consequences of Terrorism: A Public Health Strategy*. Washington, DC: National Academies Press.

Pathirage, C., Amaratunga, R., & Haigh, R. (2008). The role of philosophical context in the development of research methodology and theory. *The Built and Human Environment Review, 1*(1), 1-10.

Patterson, O., Weil, F., & Patel, K. (2010). The role of community in disaster response: conceptual models. *Population Research and Policy Review, 29*(2), 127-141.

Pelling, M., Maskrey, A., Ruiz, P., Hall, L., Peduzzi, P., Dao, Q.-H., . . . Kluser, S. (2004). *Reducing disaster risk: a challenge for development*. Retrieved from New York:

Pennings, J. M., & Grossman, D. B. (2008). Responding to crises and disasters: The role of risk attitudes and risk perceptions. *Disasters, 32*(3), 434-448.

Perrow, C. (1984). *Normal Accidents: Living with High-Risk Technologies*. New York: Basic Books.

Perry, R. W., & Lindell, M. K. (2003). Preparedness for emergency response: guidelines for the emergency planning process. *Disasters, 27*(4), 336-350.

Petty, N. J., Thomson, O. P., & Stew, G. (2012). Ready for a paradigm shift? Part 2: Introducing qualitative research methodologies and methods. *Manual Therapy, 17*(5), 378-384.

Planning and Resource Development Department. (2004-2016). *Annual Statistical Report, Unpuplished Manuscript*. Iraqi Ministry of Health. Baghdad, Iraq.

Planning Department. (2015). *Hyogo Framework for Action 2013 – 2015 (HFA): Follow-up to Iraqi General Directorate of Civil Defence, Unpublished Manuscript, UNISDR report*. Iraqi General Directorate of Civil Defence. Baghdad, Iraq

Platt, S. (2015). *A Decision Making Model of Disaster Resilience and Recovery*. Paper presented at the SECED 2015 Conference: Earthquake Risk and Engineering towards a Resilient World 9-10 July 2015, Cambridge, UK.

Prideaux, B. (2004). The Need to Use Disaster Planning Frameworks to Respond to Major Tourism Disasters: Analysis of Australia's Response to Tourism Disasters in 2001. *Journal of Travel & Tourism Marketing, 15*(4), 281-298. doi:10.1300/J073v15n04_04

Quarantelli, E. L. (1977). Social aspects of disasters and their relevance to pre-disaster planning. *Disasters, 1*(2), 98-107.

Quarantelli, E. L. (1984). Organizational behavior in disasters and implications for disaster planning. *Monographs of the National Emergency Training Center, 1*(2), 1-31.

Quarantelli, E. L. (1988). Disaster crisis management: A summary of research findings. *Journal of Management Studies, 25*(4), 373-385.

Quarantelli, E. L. (1997a). *Research based criteria for evaluating disaster planning and managing*. Newark, Delaware: Disaster Research Center, University of Delaware.

Quarantelli, E. L. (1997b). Ten criteria for evaluating the management of community disasters. *Disasters, 21*(1), 39-56.

Remenyi, D. (1998). *Doing research in business and management: an introduction to process and method*. London: Sage.

Ren, Y., Kiesler, S., & Fussell, S. R. (2008). Multiple group coordination in complex and dynamic task environments: Interruptions, coping mechanisms, and technology recommendations. *Journal of Management Information Systems, 25*(1), 105-130.

Robert, B., & Lajtha, C. (2002). A new approach to crisis management. *Journal of Contingencies and Crisis Management, 10*(4), 181-191.

Rowlands, A., Tan, N. T., & Yuen, F. K. (2007). Preface: contribution of social work to recovery and rehabilitation after the Asian tsunami disaster. *Social Work in Disability & Rehabilitation, 5*(3-4), xxv-xxxi.

Rudman, W. B., Clarke, R. A., & Metzl, J. F. (2003). *Emergency responders: Drastically underfunded, dangerously unprepared*. New York: Council on Foreign Relations.

Saban, L. I. (2014). Entrepreneurial Brokers in Disaster Response Network in Typhoon Haiyan in the Philippines. *Public Management Review, 17*(10), 1496–1517,.

Saeed, M. R. (2012). *A System for Disaster Response Process Management.* (MSc), KTH Information and Communication Technology. Retrieved from http://www.diva-portal.org/smash/get/diva2:504617/FULLTEXT01.pdf

Sakurai, M., Watson, R. T., & Kokuryo, J. (2016). *How do Organizational Processes Recover Following a Disaster? A Capital Resiliency Model for Disaster Preparedness.* Paper presented at the 2016 49th Hawaii International Conference on System Sciences (HICSS), 5-8th January, 2016, Koloa, HI, USA, pp. 2862-2871.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research methods for business students* (4th ed.). Harlow, UK: Prentice Hall.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed.). Harlow, UK: Prentice Hall.

Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students* (6th ed.). Harlow, UK: Pearson.

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students* (7th ed.): New York: Pearson Education.

Sawalha, I. H. S., Jraisat, L. E., & Al-Qudah, K. A. (2013). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management, 22*(3), 210-228.

Schipper, L., & Pelling, M. (2006). Disaster risk, climate change and international development: scope for, and challenges to, integration. *Disasters, 30*(1), 19-38.

Schneider, S. K. (1992). Governmental response to disasters: The conflict between bureaucratic procedures and emergent norms. *Public Administration Review, 52*(2), 135-145.

Sexton, M. (2007). *PhD Research: Axiological Purposes, Ontological Cages and Epistemological Keys.* Paper presented at the Research Institute for the Built and Human Environment Research Methodology Workshop, University of Salford.

Shaluf, I. M. (2007). Disaster types. *Disaster Prevention and Management, 16*(5), 704-717.

Shaluf, I. M., & Ahmadun, F. (2006). Disaster types in Malaysia: an overview. *Disaster Prevention and Management, 15*(2), 286-298.

Shaw, R., Mallick, F., & Takeuchi, Y. (2011). Essentials of Higher Education in Disaster Risk Reduction: Prospects and Challenges. In R. Shaw, k. Shiwaku, & Y. Takeuchi (Eds.), *Disaster Education* (pp. 95-113). doi:10.1108/S2040-7262(2011)0000007011

Shen, S., & Shaw, M. (2004). *Managing coordination in emergency response systems with information technologies.* Paper presented at the Proceedings of the Tenth Americas Conference on Information Systems AMCIS, 12-31 August 2004, New York, USA, pp. 2110-2120.

Sinclair, H., Doyle, E. E., Johnston, D. M., & Paton, D. (2012). Decision-making training in local government emergency management. *International Journal of Emergency Services, 1*(2), 159-174.

Smirnov, A., Levashova, T., Pashkin, M., Shilov, N., & Komarova, A. (2007). Disaster response based on production network management tasks. *Management Research News, 30*(11), 829-842.

Smith, C. P. (2000). Content analysis and narrative analysis. In T. Reis & C. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 313-335). Cambridge: Cambridge University Press.

Smith, D. M. (2011). *A study of command and control of multi-agency disaster response operations.* (PhD Thesis), University of Phoenix, Phoenix, AZ.

Smithson, A. E., & Levy, L.-A. (2000). *Ataxia: the chemical and biological terrorism threat and the US response*. Washington, DC: Henry L. Stimson Center

Statistic Department. (2016). *Internal Statistic, Unpublished Manuscript*. Iraqi Ministry of Interior. Baghdad, Iraq.

Steigenberger, N. (2016). Organizing for the Big One: A Review of Case Studies and a Research Agenda for Multi-Agency Disaster Response. *Journal of Contingencies and Crisis Management, 24*(2), 60-72. doi:10.1111/1468-5973.12106

Suter, W. N. (2012). *Introduction to Educational Research: A Critical Thinking Approach* (2nd ed.). London: Sage.

Teijgeler, R. (2006). Preserving cultural heritage in times of conflict. In G. E. Gorman & S. J. Shep (Eds.), *Preservation management for libraries, archives and museums* (pp. 133-165). London: Facet Publishing.

Terawi, T. M. H. A. (2008). *The Status of Crisis Management and Proposed Alternatives as Perceived by the Palestinian Leaders of Civic and Security Institutions.* (MSc Thesis), An-Najah National University, Nablus, Palestine.

Torma-Krajewski, J., & Powers, J. (2010). *Decision-Making and Emergency Responses, Training for Incident Command Centers and Mine Rescue Teams.* Golden, CO: Colorado School of Mines.

Trim, P. R. J. (2004). An integrative approach to disaster management and planning. *Disaster Prevention and Management, 13*(3), 218-225. doi:10.1108/09653560410541812

Turner, B. A., & Pidgeon, N. F. (1997). *Man-made disasters* (2nd ed.). Oxford: Butterworth-Heinemann.

Turoff, M., Chumer, M., de Walle, B. V., & Yao, X. (2004). The design of a dynamic emergency response management information system (DERMIS). *Journal of Information Technology Theory and Application (JITTA), 5*(4), 1-35.

Ugwu, K., & Ihejirika, C. (2013). Need Assessment: A Key To Immediate Response In Disaster Management (A Case Study Of Pakistan Earthquake). *International Journal of Innovative Research & Studies, 2*(11), 51-65.

Uhr, C., Johansson, H., & Fredholm, L. (2008). Analysing emergency response systems. *Journal of Contingencies and Crisis Management, 16*(2), 80-90.

UNISDR. (2009). UNISDR terminology on disaster risk reduction. Geneva: UNISDR. Retrieved from http://www.preventionweb.net/files/7817_UNISDRTerminologyEnglish.pdf

UNISDR. (2016). *Risk Assessment and Management*. Paper presented at the UNISDR Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030, 27-29 January 2016, Geneva International Conference Centre.

UNISDR, & UNOCHA. (2008). *Disaster preparedness for effective response: guidance and indicator package for implementing priority five of the Hyogo Framework: Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters*. New York: United Nations.

Unlu, A., Kapucu, N., & Sahin, B. (2010). Disaster and crisis management in Turkey: a need for a unified crisis management system. *Disaster Prevention and Management, 19*(2), 155-174.

Urban Planning Department. (2014). *The study of civil defence centres within the limits of the Municipality of Baghdad, Unpublished Manuscript* Baqer et al. Study. The Municipality of Baghdad, Designs Department and Ministry of Interior, General Directorate of Civil Defence Archives. Baghdad, Iraq.

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences, 15*(3), 398-405.

Vasilescu, L., Khan, A., & Khan, H. (2008). Disaster management cycle–a theoretical approach. *Management & Marketing-Craiova, 1*, 43-50.

Wallace, W. A., & De Balogh, F. (1985). Decision support systems for disaster management. *Public Administration Review, 45*(Special Issue), 134-146.

Walliman, N. (2006). *Social Research Methods*. London: SAGE.

Warfield, C. (2008). The disaster management cycle. *Disaster Mitigation and Management.* Retrieved from https://www.gdrc.org/uem/disasters/1-dm_cycle.html

Wehbe, S. H. (2013). *Arab Strategy for Disaster Risk Reduction 2020* Paper presented at the First Arab Conference on Disaster Risk Reduction 19-21 March 2013, Al-Aqaba - Jordan.

Weihrich, H., & Koontz, H. (2005). *Management: A global perspective* (11th ed.). Singapore: McGraw-Hill.

Wilson, C. (2013). *Credible Checklists and Quality Questionnaires: A User-Centered Design Method*. Burlington: Elsevier Science.

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At risk: natural hazards, people's vulnerability and disasters*. London: Routledge.

Withanaarachchi, J., & Setunge, S. (2014). *Influence of decision making during disasters and how it impacts a community*. Paper presented at the 10th International Conference of the International Institute for Infrastructure Resilience and Reconstruction (I3R2) 20–22 May 2014 Purdue University, West Lafayette, Indiana, USA pp. 176-188.

Wong, E., al-Saiedi, A. R., & Silva, J. (2005, 27 November). Shiite Cleric Wields Violence and Popularity to Increase Power in Iraq. *The New York Times*.

World Health Organization. (2002). *Disasters and emergencies. Definitions Training Package*. Addis Ababa: WHO/EHA PanAfrican Emergency Training Centre.

Yilmaz, K. (2013). Comparison of Quantitative and Qualitative Research Traditions: epistemological, theoretical, and methodological differences. *European Journal of Education, 48*(2), 311-325.

Yin, R. K. (2014). *Case study research: Design and methods*. London: Sage.

Zhou, Q., Huang, W., & Zhang, Y. (2011). Identifying critical success factors in emergency management using a fuzzy DEMATEL method. *Safety Science, 49*(2), 243-252.

Zimmerman, R. (1985). The relationship of emergency management to governmental policies on man-made technological disasters. *Public Administration Review, 45*(Special Issue), 29-39.

Zonabend, F. (1992). The monograph in European ethnology. *Current Sociology, 40*(1), 49-54.