



School of the Built Environment

A Systemic Approach for Construction Contract Claims Settlement in the Kingdom of Saudi Arabia

Adel Mohammed Alghamdi

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Abstract

The Kingdom of Saudi Arabia (KSA) construction sector is an important part of the country's Vision 2030 programme that is focused upon increasing non-oil economic growth. The structure of the KSA construction sector is different to many countries because of the reliance upon foreign workers and international companies to deliver projects. Culture also plays an important role, together with the use of Sharia law for dispute settlement. The KSA government is a key client of the sector commissioning projects to develop and improve housing, infrastructure, and social projects. Construction claims are endemic on KSA public sector projects. Cases of disputes, conflicts, and claims are on the rise over the past two decades which impact the time, cost, and quality of the work. In the worst-case scenario, they may even result in project abandonment.

Making claims and resolving disputes takes a long time, costs money and resources, and can affect the professional relationship of the parties involved. The costs of disputes and contractual claims is rising and becoming more difficult. The claims settlement procedure is a complex process of interdependent and interrelated activities, which takes time and can delay the project.

This research considers the efficiency of claim settlement procedures in KSA construction projects with the aim of developing a code of best practice. To develop the code, data and information was collected through mixed methods, including qualitative and quantitative methods. Interviews were conducted with 15 professionals involved in KSA construction projects. A survey questionnaire was designed and distributed to the professionals to collect quantitative data to frame measures for the code of best practice.

The primary causes of claims have been identified. The most important feature is the lack of design development at the tender stage, with projects being started on site with incomplete and inaccurate information, which ultimately leads to claims. Contingency allowances are included in tenders for risks that are poorly specified. The two most critical areas in the pre-construction phase are the design process and the contract awarding procedure.

There are five contributions.

Firstly, the research explored the underlying causes of disputes and claims through qualitative and quantitative data raised from interviews and survey questionnaires from 15 respondents.

Secondly, it explored the present practices employed from project initiation to claim occurrences and from claim occurrences to claim resolution through face-to-face interviews from 15 respondents to highlight areas requiring improvement.

Thirdly, the research ranked the identified improvement areas and ranked and rated the recommendations needed to achieve these through quantitative analysis.

Fourthly, the research helped build the cause-and-effect relationship, it identified the interrelationships and interdependence within the system to understand the complexity of aligning a code of best practice to achieve the final objective.

Fifthly, a framework for a code of best practice to mitigate claim settlement in KSA was developed and tested. The measures were designed through primary (qualitative and quantitative) and secondary (literature, articles) preventive and corrective strategies.

It is a framework that highlights the required improvements in project initiation to claim resolution and mitigate the negative effects. The recommendations were designed through qualitative data analysis.

Recommendations are given for the further investigation and research needed to explore the improvement areas and recommendations for academic and industrial use in KSA in the future.

Keywords: Causes of disputes, underlying causes of claims, dispute resolution method, claim settlement, Saudi construction project management, mixed methodology, relative importance index.

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Declaration

‘I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.’

..... Adel Mohammed Alghamdi

Table of Contents

ABSTRACT	II
ACKNOWLEDGEMENTS	IV
DECLARATION	V
TABLE OF CONTENTS	VI
CHAPTER 1: INTRODUCTION	19
1.1 Introduction:	19
1.2 Background:	19
1.3 Characteristics of claims for an extension of time and cost reimbursement:	22
1.4 KSA construction sector overview:	23
1.4.1 Construction sector characteristics:	24
1.5 Identification of gaps in the literature:	25
1.6 Research justification:	26
1.7 Research question:	27
1.8 Aim and objectives:	28
1.9 Underpinning theory and research scope:	28
1.10 Research method:	30
1.11 Thesis structure:	30
1.12 Summary:	32
CHAPTER 2: LITERATURE REVIEW	33
2.1 Introduction:	33
2.2 Contextualizing the issues through the literature:	33
2.3 KSA construction industry delays:	34

2.4	Research into the causes of delays in the KSA:	37
2.4.1	<i>Assaf et al. (1995):</i>	37
2.4.2	<i>Al-Khalil and Al-Ghafy (1999):</i>	38
2.4.3	<i>Falqi (2004):</i>	39
2.4.4	<i>Al Kharashi and Skitmore (2009):</i>	39
2.4.5	<i>Alzara et al. (2016):</i>	40
2.4.6	<i>Summary of delay causes in the KSA:</i>	40
2.5	Causes of delays in countries:	42
2.5.1	<i>Sambasivan and Soon (2007):</i>	43
2.5.2	<i>Summary of construction delay causes in the KSA:</i>	44
2.5.3	<i>Causes of delays in other countries:</i>	45
2.5.4	<i>Comparison of delay causes across the KSA and other countries:</i>	46
2.6	Contractual claims and litigation:	48
2.7	Delay claim analysis approaches:	50
2.7.1	<i>Kartam (1999):</i>	51
2.7.2	<i>Braimah (2013):</i>	52
2.7.3	<i>Boyle (2007):</i>	53
2.7.4	<i>Markis (2004):</i>	53
2.7.5	<i>Integrated approaches:</i>	54
2.8	Claim management:	54
2.8.1	<i>Kululanga et al. (2001):</i>	55
2.9	Dispute resolution methods:	55
2.10	Claim settlement:	57
2.11	Mitigation of causes of delay:	57
2.12	Identification of gaps in the literature:	60
2.13	Summary:	62
CHAPTER 3: INTERRELATIONSHIP AND COMPLEXITY		63
3.1	Introduction:	63
3.2	Claim Management:	63
3.3	Causal Analysis:	63
3.4	Complexity Theory:	64
3.5	Chaos theory:	65

3.6	Decision making:	66
3.7	Construction project complexity, chaos and interrelationships:	66
	<i>3.7.1 Claim management process:</i>	<i>69</i>
3.8	Interrelationship and interdependence within claim management system:	70
3.9	Drivers, enablers, disruptors and issues:	77
3.10	Summary	79
CHAPTER 4: CONCEPTUAL FRAMEWORK		81
4.1	Introduction	81
4.2	Introduction to Conceptual Framework:	81
4.3	Cause and effect diagram:	83
4.4	Claim management process:	89
4.5	Overview of core causes and their effects:	95
	<i>4.5.1 Design-related issues:</i>	<i>96</i>
	<i>4.5.2 Construction process issues:</i>	<i>97</i>
	<i>4.5.3 Project management-related issues:</i>	<i>99</i>
	<i>4.5.4 Government-related issues:</i>	<i>101</i>
	<i>4.5.5 Contract administration issues:</i>	<i>102</i>
4.6	Conceptual framework for code of best practice for claim settlement:	102
4.7	Summary	106
CHAPTER 5: OVERVIEW OF THE KINGDOM OF SAUDI ARABIA CONSTRUCTION INDUSTRY		108
5.1	Introduction:	108
5.2	Overview:	108
5.3	The KSA construction industry:	110
5.4	Market overview:	112
5.5	Characteristics of the industry:	113
	<i>5.5.1 Operating environment:</i>	<i>113</i>
	<i>5.5.2 Workforce challenges:</i>	<i>114</i>

5.5.3	<i>Industry performance:</i>	115
5.5.4	<i>KSA construction industry legal framework:</i>	117
5.5.5	<i>KSA construction contracts:</i>	118
5.5.6	<i>KSA dispute resolution methods:</i>	119
5.5.7	<i>KSA tendering and procurement law:</i>	121
5.6	Characteristics of KSA industry impacting research:	122
5.7	Summary:	122
CHAPTER 6: RESEARCH METHODOLOGY		124
6.1	Introduction:	124
6.2	Research approach:	124
6.3	Research Philosophy:	126
6.4	Research approach:	131
6.5	Methodological choices:	133
6.6	Research strategy:	135
6.7	Time horizon:	137
6.8	Research Techniques:	137
6.9	Data collection method:	137
6.9.1	<i>Literature Review:</i>	138
6.9.2	<i>Qualitative data collection:</i>	138
6.9.2.1	Interview sample:	138
6.9.3	<i>Quantitative data collection:</i>	140
6.9.3.1	Survey questionnaire sample:	140
6.9.3.2	Survey questionnaire method:	140
6.10	Data Analysis:	141
6.10.1	<i>Analysis of interviews:</i>	142
6.10.2	<i>Quantitative data analysis:</i>	143
6.11	Data validity and reliability:	145
6.12	Ethical considerations:	145
6.13	Respondents' overview:	145
6.14	Summary:	148

CHAPTER 7: DATA COLLECTION AND ANALYSIS	150
7.1 Introduction:	150
7.2 Face to face interviews:	150
7.3 Section one: Impact of contractual claims on cost and time reimbursement:	150
7.3.1 <i>Reasons for claims being endemic:</i>	150
7.3.2 <i>Size and type of project:</i>	155
7.3.3 <i>The current contractual claim system:</i>	157
7.3.4 <i>Bureaucracy:</i>	159
7.4 Section two: Causes of claims in KSA construction projects:	163
7.4.1 <i>Underlying causes:</i>	163
7.4.2 <i>Procurement of contract:</i>	166
7.4.3 <i>Difficulties faced in KSA: risk passed to construction team:</i>	167
7.4.4 <i>Claims related to type of projects:</i>	168
7.4.5 <i>The standard form of contract fit to modern needs:</i>	169
7.4.6 <i>Introducing standardised claim settlement:</i>	170
7.5 Section three: Claim resolution methods employed in KSA construction projects:	171
7.5.1 <i>Preferred methods of claim resolution in KSA:</i>	171
7.5.2 <i>Better ways to resolve contractual claims:</i>	172
7.5.2.1 <i>Develop efficacious claim management process:</i>	173
7.5.2.2 <i>Focus on ADR methods:</i>	173
7.5.2.3 <i>Judicial Training:</i>	174
7.5.2.4 <i>Claim submission and evaluation:</i>	174
7.5.3 <i>Fundamental problems of claim resolution:</i>	174
7.6 Section four: Alternative Dispute Resolution (ADR) in KSA construction projects:	176
7.6.1 <i>Critical factors:</i>	176
7.6.2 <i>Barriers to using ADR methods:</i>	177
7.6.3 <i>ADR methods suitable for KSA:</i>	179
7.7 Findings:	182
7.8 Summary:	184
CHAPTER 8: QUANTITATIVE DATA AND ANALYSIS: (SURVEY QUESTIONNAIRE)	186
8.1 Introduction:	186
8.2 Analysis of second survey questionnaire:	186

8.3	Section two: Claims in Saudi construction projects:	187
	8.3.1 <i>Effects of Claims:</i>	187
8.4	Section Three: Reasons for claims:	188
	8.4.1 <i>Financial factors:</i>	189
	8.4.2 <i>Contract related factors:</i>	191
	8.4.3 <i>Client-related factors:</i>	193
	8.4.4 <i>Design-related factors:</i>	196
	8.4.5 <i>Behaviour-related factors:</i>	198
	8.4.6 <i>Contractor-related factors:</i>	201
	8.4.7 <i>Project implementation-related factors:</i>	203
	8.4.8 <i>External factors:</i>	206
	8.4.9 <i>Overall issue ranking:</i>	207
	8.4.10 <i>Summary of the cause factors (total weight and overall rank):</i>	210
8.5	Recommendations:	212
	8.5.1 <i>Alternative ways to settle claims:</i>	212
	8.5.2 <i>Improvements needed in role of bureaucracy:</i>	213
	8.5.3 <i>Most important factor when resolving construction claims:</i>	218
	8.5.4 <i>Improvements needed in the pre-construction phase:</i>	218
	8.5.5 <i>Improvements needed in the design process:</i>	219
	8.5.6 <i>Broader construction reforms:</i>	223
	8.5.7 <i>Training programmes in project management, competency building and information technology:</i>	226
	8.5.8 <i>Legal system framework:</i>	229
	8.5.9 <i>Claim settlement procedure:</i>	231
	8.5.10 <i>The standard form of contract:</i>	234
8.6	Summary:	237
CHAPTER 9: CODE OF BEST PRACTICE TO MITIGATE THE CLAIM SETTLEMENT PROCESS IN KSA		238
9.1	Introduction:	238
9.2	Code of best practice:	238
9.3	Conceptual framework:	238
9.4	Development of conceptual framework:	238
9.5	Causes/issues that need improvement:	238
9.6	Categorising issues that need improvement:	239
	9.6.1 <i>Pre-construction process improvements:</i>	240
	9.6.2 <i>Operational level improvements (construction process):</i>	241

9.6.3	<i>Claim management improvements:</i>	242
9.6.4	<i>Industry-level improvements:</i>	243
9.7	Conceptual Framework:	245
9.8	Code of best practice to mitigate the claim settlement process in KSA:	247
9.9	Development of the framework - Code of Best Practice to mitigate the claim settlement process in KSA:	247
9.10	Improvements needed in pre-construction phase:	248
9.10.1	<i>Design process improvement:</i>	250
9.10.2	<i>Recommendations to improve the design process:</i>	250
9.10.3	<i>Tendering & contract awarding improvement:</i>	255
9.10.4	<i>Recommendations to improve the tendering & contract awarding:</i>	255
9.10.5	<i>Contract drafting improvement:</i>	257
9.10.6	<i>Recommendations to improve the contract drafting:</i>	257
9.11	Operational level improvements (construction process):	259
9.11.1	<i>Improvements in bureaucracy role:</i>	259
9.11.2	<i>Recommendations to improve the role of bureaucracy:</i>	259
9.11.3	<i>Project management and control improvements:</i>	259
9.11.4	<i>Recommendations to improve the Project management and control:</i>	260
9.11.5	<i>Supply chain management improvements:</i>	261
9.11.6	<i>Recommendations to improve the Supply chain management:</i>	261
9.12	Claim management improvements:	263
9.12.1	<i>Claim settlement methods' improvement:</i>	263
9.12.2	<i>Recommendations to improve the claim settlement methods:</i>	263
9.12.3	<i>Standardisation of practices (claim presentation and evaluation):</i>	266
9.12.4	<i>Recommendations to improve the standardisation of practices (claim presentation and evaluation):</i>	266
9.12.5	<i>Robustness and readiness of legal infrastructure:</i>	267
9.12.6	<i>Recommendations to improve the Robustness and readiness of legal infrastructure:</i>	268
9.13	Industry-level improvements:	269
9.13.1	<i>Standardise performance benchmarks and classification of the sector:</i>	270
9.13.2	<i>Recommendations to standardise performance benchmarks and classification of the sector:</i>	270
9.13.3	<i>Information management (communication and collaboration):</i>	273
9.13.4	<i>Recommendations to improve information management (communication and collaboration):</i>	274
9.13.5	<i>Modern IT tools and applications:</i>	276
9.13.6	<i>Recommendations to improve use of modern IT tools and applications:</i>	276
9.13.7	<i>Competency Building:</i>	277
9.13.8	<i>Recommendations for competency building:</i>	277

9.13.9	<i>Robust Legal infrastructure:</i>	281
9.14	Summary of the cause, suggested improvements and recommendations categories:	281
9.15	Summary:	283
CHAPTER 10: CONCLUSIONS		285
10.1	Introduction:	285
10.2	Introduction to research:	285
10.3	Research objectives:	287
10.3.1	<i>Objective 1: To identify the negative effects and impacts of claim on construction project progress</i>	288
10.3.2	<i>Objective 2: To identify the underlying critical causes of claim occurrences dominant in the KSA construction projects</i>	288
10.3.3	<i>Objective 3: To explore the existing practices prevalent in KSA construction projects from project initiation to claim occurrences and to claim settlement process</i>	290
10.3.4	<i>Objective 4: To investigate factors important in hindering the process and resulting inefficiency in the claim settlement process</i>	294
10.3.5	<i>Objective 5: To investigate the drivers, issues, enablers and disruptors which influence the outcomes of the construction work in KSA construction industry.</i>	296
10.3.6	<i>Objective 6: To understand the interdependence, complexity and the systematic approach to construction project planning and performance through project life cycle.</i>	298
10.3.7	<i>Objective 7: To develop framework for a code of best practice to improve the process from project initiation to claim occurrence (due to dispute or conflicts) and from claim occurrence to claim settlement to mitigate the negative effects</i>	302
10.4	Summary of research Objectives:	303
10.5	Original Contribution to Knowledge	305
10.6	Limitations of the research:	306
10.7	Validation Phase	306
10.8	Recommendations for future research	306
10.9	Summary:	307
CHAPTER 11: REFERENCES		308
APPENDIX 1: 342		

APPENDIX 2: 345

Table of Tables

<i>Table 2-1 Summary of research papers regarding causes of delay in the KSA</i>	36
<i>Table 2-2 Ranked causes of construction delays in the KSA</i>	41
<i>Table 2-3 Top ten causes of delay in the KSA in selected studies</i>	41
<i>Table 2-4 Summary of studies regarding delay causes in other countries</i>	43
<i>Table 2-5 Top ten causes of delays ranked by research conducted in other countries</i>	45
<i>Table 2-6 Top ten causes of delay in other countries (selected papers)</i>	45
<i>Table 2-7 Comparison of factors causing delays in developing and developed countries</i>	47
<i>Table 2-8 Comparisons of ranked causes across developing countries, developed countries and the KSA</i>	48
<i>Table 2-9 Litigious behaviour relevant in the KSA</i>	49
<i>Table 2-10 Main causes of litigious behaviour and claims for three countries (USA, UK and Korea)</i>	49
<i>Table 2-11 Studies on mitigating causes of delays</i>	59
<i>Table 2-12 Main inhibiting factors in the UK and Ghana and respective mitigating measures</i>	60
<i>Table 3-1 Issues and their related categories in claim management</i>	72
<i>Table 3-2 Subsystems of claim management and their related processes and actors</i>	73
<i>Table 3-3 Colour code for construction industry subsystem</i>	73
<i>Table 3-4 Colour code for project subsystem</i>	73
<i>Table 3-5 Colour code for procurement system subsystem</i>	73
<i>Table 3-6 Colour code for claim management subsystem</i>	73
<i>Table 3-7 Colour code for contract drafting subsystem</i>	73
<i>Table 3-8 Summary of sub systems and its related drivers, enablers, disruptors and issues</i>	79
<i>Table 4-1 The effects of the causation factors (by category).</i>	85
<i>Table 4-2 The effects of the factors on the issues of claim settlement.</i>	89
<i>Table 4-3 Issues categorised by phase</i>	89
<i>Table 4-4 The factors and their categories of improvement</i>	103
<i>Table 4-5 Categories of recommendations to achieve needed improvements</i>	104
<i>Table 6-1 Adopted from Easterby-Smith et al., 2003</i>	130
<i>Table 6-2 Experience of respondents in years</i>	146
<i>Table 6-3 Saudi Council of Engineering's classification of respondents</i>	146
<i>Table 6-4 Professional certification or licenses of respondents</i>	147
<i>Table 6-5 Present designation of the respondents</i>	147
<i>Table 6-6 Summary of present designation and roles and responsibilities</i>	148
<i>Table 6-7 Summary of job roles previously held by respondents</i>	148
<i>Table 7-1 Factors affecting the design process</i>	165
<i>Table 7-2 Factors affecting the site production process</i>	165
<i>Table 7-3 Factors affecting the site production process</i>	166
<i>Table 7-4 Better ways to resolve contract claims</i>	172
<i>Table 7-5 Categories of suggested improvements</i>	173
<i>Table 7-6 The coded groups within development of an efficacious claims management process category</i>	173
<i>Table 7-7 The coded groups within the 'focus on ADR methods' category</i>	174
<i>Table 7-8 The coded groups within the judicial training category</i>	174
<i>Table 7-9 The coded groups within the claim submission and evaluation category</i>	174
<i>Table 7-10 Ranking of ADR methods considered suitable for KSA</i>	180
<i>Table 8-1 The detail of the frequency distribution of the ranking for the finance related factor.</i>	190
<i>Table 8-2 The detail of the frequency distribution of the ranking for the contract related factor</i>	193
<i>Table 8-3 The detail of the frequency distribution of the ranking for the client related factor</i>	195
<i>Table 8-4 The detail of the frequency distribution of the ranking for the design related factors.</i>	198
<i>Table 8-5 The detail of the frequency distribution of the ranking for the behaviour-related factor</i>	200

<i>Table 8-6 The detail of the frequency distribution of the ranking for the contractor related factors</i>	202
<i>Table 8-7 The detail of the frequency distribution of the ranking for the project implementation-related factors</i>	205
<i>Table 8-8 The detail of the frequency distribution of the ranking for the external factors</i>	207
<i>Table 8-9 The detail of the frequency distribution of the ranking for the cause categories</i>	209
<i>Table 8-10 Summary of the cause categories (total weightage and rank)</i>	212
<i>Table 8-11 Relative importance of suggested recommendations for improvement</i>	213
<i>Table 8-12 Adverse factors related to the role of bureaucracy</i>	215
<i>Table 8-13 Ranking of the suggestions to improve the role of bureaucracy according to Relative importance index</i>	216
<i>Table 8-14 Top ranked recommendations regarding bureaucracy role allocated to broader categories.</i>	216
<i>Table 8-15 Ranking of the suggestions to improve the role of bureaucracy as ease of implementation according to Relative importance index</i>	217
<i>Table 8-16 Ranking of factors important for resolving a claim</i>	218
<i>Table 8-17 Processes to be improved in pre-construction phase according to relative importance index</i>	219
<i>Table 8-18 Ranking of the suggestions to improve the design process according to Relative importance index.</i>	220
<i>Table 8-19 Relative category associated to top ranked design process recommendations</i>	221
<i>Table 8-20 Ranking of the suggestions to improve design process as ease of implementation according to Relative importance index.</i>	222
<i>Table 8-21 Recommendations to improve the overall design process to reduce damage in later stages according to relative importance index</i>	223
<i>Table 8-22 Categories allocated to top ranked recommendations regarding the process of designing using RII</i>	223
<i>Table 8-23 Ranking of broader construction industry reforms recommendations as per RII</i>	224
<i>Table 8-24 Categorisation of top ranked broader construction reforms recommendations.</i>	225
<i>Table 8-25 Ranking of recommendations for broader construction industry reforms as ease of implementation according to RII.</i>	226
<i>Table 8-26 Ranking of Training programmes recommendations as per RII</i>	228
<i>Table 8-27 Categories allocated to top Ranked recommendations for Training programme using RII</i>	228
<i>Table 8-28 Ranking of training programmes as ease of implementation.</i>	229
<i>Table 8-29 Ranking of the recommendations for the legal system framework according to RII.</i>	230
<i>Table 8-30 Categories of top ranked recommendations regarding legal system framework using RII</i>	231
<i>Table 8-31 Ranking of legal system framework recommendation as ease of implementation</i>	231
<i>Table 8-32 Ranking of recommendations for improvement to claim settlement procedures according to RII</i>	233
<i>Table 8-33 Categories of top ranked recommendations regarding claim settlement procedure using RII</i>	233
<i>Table 8-34 Ranking of recommendations for improving claim settlement procedures as ease of implementation according to RII.</i>	234
<i>Table 8-35 Significance of amendments in the standard form of contract according to RII.</i>	235
<i>Table 8-36 Categories of top Ranked recommendations regarding the standard form of contract using RII</i>	236
<i>Table 8-37 Amendments in the standard form of contract as ease of implementation according to RII</i>	236
<i>Table 9-1 Categorisation of causes</i>	239
<i>Table 9-2 Summary of improvement categories, needed improvements, recommendations and measures</i>	283
<i>Table 10-1 Most critical factors in KSA</i>	290
<i>Table 10-2 Summary of sub systems and its related drivers, enablers, disruptors, and issues</i>	298
<i>Table 10-3 Subsystems of claim management and their related processes and actors</i>	300
<i>Table 10-4summary of objectives and how they were met</i>	305

Table of Figures

<i>Figure 2-1 Claim occurrence recommendations and strategies presented the literature</i>	58
<i>Figure 3-1 Claim management in terms of sub systems, actors and issues</i>	71
<i>Figure 3-2 The subsystems, its processes and related issues.</i>	75
<i>Figure 3-3 The interlinked subsystems, its processes and related issues.</i>	76
<i>Figure 4-1 Research steps taken to design the conceptual model</i>	82
<i>Figure 4-2 Cause and effect diagram of causes of delays/claims</i>	85
<i>Figure 4-3 Interlinked cause and effect diagram of causes of delays/claims</i>	87
<i>Figure 4-4 Cause and effect diagram of causes of the inefficient claim settlement procedure</i>	88
<i>Figure 4-5 Interlinked cause and effect diagram of causes of the inefficient claim settlement procedure</i>	90
<i>Figure 4-6 Interlinked Cause and effect diagram of causes of the inefficient claim settlement procedure</i>	90
<i>Figure 4-7 Claim Management Process (Flow chart)</i>	91
<i>Figure 4-8 Factors associated with core causes categories - Design and construction issues</i>	96
<i>Figure 4-9 Factors associated with core causes categories – construction and PM issues</i>	99
<i>Figure 4-10 Factors associated with core causes -government and bureaucracy issues</i>	101
<i>Figure 4-11 Conceptual framework of claim settlement for code of best practice</i>	105
<i>Figure 5-1 The Kingdom of Saudi Arabia</i>	108
<i>Figure 5-2 Saudi construction awards by sector, 2010-2020</i>	112
<i>Figure 5-3 KSA contractor awards by industry (source: Mordor Intelligence, 2021)</i>	113
<i>Figure 6-1 Nested research methodology. Adopted from Kagioglou et al., 2008</i>	125
<i>Figure 6-2 The Research Onion Model (adopted from Lewis et al., 2012)</i>	126
<i>Figure 6-3 Philosophical positioning of the research</i>	131
<i>Figure 6-4 Deductive, Inductive and Abductive approach (adopted from Fischer 2001)</i>	131
<i>Figure 6-5 Defining the inductive, deductive, and abductive methods of reasoning</i>	132
<i>Figure 6-6 Defining the inductive, deductive, and abductive methods of reasoning</i>	133
<i>Figure 6-7 Research Choices (Adapted from Saunders et al., 2016, p. 152)</i>	134
<i>Figure 7-1 The causes as frequency per construction project life cycle phases (Adapted from Mirza, 2005).</i>	153
<i>Figure 7-2 Frequency of dominant factors in the construction phase</i>	154
<i>Figure 7-3 Histogram of the frequencies of the factors relevant to size and type of project identified by respondents</i>	157
<i>Figure 7-4 The frequency of the reasons for ineffective claim settlement</i>	158
<i>Figure 7-5 The frequency of the suggested changes for improvements</i>	161
<i>Figure 7-6 The main areas of reform</i>	162
<i>Figure 7-7 Frequency percentage of suggestions under reform construction sector segment</i>	162
<i>Figure 7-8 Frequency percentage of suggestions under Reform Processes segment</i>	163
<i>Figure 7-9 The underlying causes of claims</i>	164
<i>Figure 7-10 The factors upon which the procurement of contract is based</i>	167
<i>Figure 7-11 Standard form of contract fits modern needs</i>	169
<i>Figure 7-12 Introduce standardised claim settlement</i>	170
<i>Figure 7-13 Preferred method of claim resolution in KSA</i>	171
<i>Figure 7-14 Ranking of the fundamental problems of claim resolution</i>	175
<i>Figure 7-15 The critical factors for ADR identified in the interviews</i>	177
<i>Figure 7-16 The frequency of barriers to ADR methods reported in the interviews</i>	178
<i>Figure 7-17 The coded answers within reform legal system category</i>	181
<i>Figure 7-18 The coded answers within amend claim settlement process category</i>	181
<i>Figure 7-19 The coded answers within introduce regulatory procedures category</i>	182
<i>Figure 8-1 Respondents' views on the impact of construction claims</i>	187
<i>Figure 8-2 Respondents' view on the effect of claims on time, cost and quality</i>	188

<i>Figure 8-3 The most important financial factor that plays a critical role in the claims process</i>	189
<i>Figure 8-4 The ranking of the financial factors (overall weightage/score)</i>	191
<i>Figure 8-5 The most important contract related factor that plays a critical role in the claims process</i>	192
<i>Figure 8-6 The ranking of the contract related factors (overall weightage/score)</i>	193
<i>Figure 8-7 The most important client related factor that plays a critical role in the claims process</i>	194
<i>Figure 8-8 The ranking of the client related factors (overall weightage/score)</i>	196
<i>Figure 8-9 The most important design related factor that plays a critical role in the claims process</i>	197
<i>Figure 8-10 The ranking of the design related factors (overall weightage/score)</i>	198
<i>Figure 8-11 The most important behaviour related factor that plays a critical role in the claims process</i>	199
<i>Figure 8-12 The ranking of the behaviour related factors (overall weightage/score)</i>	201
<i>Figure 8-13 The most important contractor related factor that plays a critical role in the claims process</i>	201
<i>Figure 8-14 The ranking of the contractor related factors (overall weightage/score)</i>	203
<i>Figure 8-15 The most important project implementation related factor that plays a critical role in the claims process</i>	204
<i>Figure 8-16 The ranking of the project implementation-related factors (overall weightage/score)</i>	206
<i>Figure 8-17 The most important external factor that plays a critical role in the claims process</i>	206
<i>Figure 8-18 The ranking of the external factors (overall weightage/score)</i>	207
<i>Figure 8-19 The most critical cause category in the claims process</i>	208
<i>Figure 8-20 The ranking of the cause categories (overall weightage/score)</i>	210
<i>Figure 8-21 Response to question on the adoption alternative claim settlement methods</i>	213
<i>Figure 8-22 Views of the respondents on how to improve/lessen bureaucracy</i>	214
<i>Figure 8-23 The respondents' views on the detrimental impact of the design process</i>	219
<i>Figure 8-24 Respondents' views on whether broader reforms are needed to improve the claims processes</i>	224
<i>Figure 8-25 Respondents' view on the introduction of training programmes</i>	227
<i>Figure 8-26 Respondents' views on the need for amendments to the legal system</i>	230
<i>Figure 8-27 Respondents views on the need for robust amendment of the claim settlement procedure</i>	232
<i>Figure 8-28 Respondents' views on amendments to the standard form of contract</i>	235
<i>Figure 9-1 Categorisation of the areas requiring improvement</i>	240
<i>Figure 9-2 Conceptual framework to mitigate claim settlement in KSA</i>	246
<i>Figure 9-3 Claim management process needed alternatives and recommendations</i>	248
<i>Figure 9-4 Claim management process needed alternatives and recommendations cont.</i>	248
<i>Figure 10-1 Critical factors linked to claim occurrences in KSA</i>	290
<i>Figure 10-2 Inefficient practices in design, procurement, and construction stages</i>	292
<i>Figure 10-3 Major area of improvement and its factors in claim settlement in KSA</i>	293
<i>Figure 10-4 Claim management in terms of sub systems, actors, and issues</i>	299
<i>Figure 10-5 The interlinked subsystems, its processes, and related issues.</i>	301
<i>Figure 10-6 Framework of the code of best practice to mitigate claim settlement in KSA</i>	302

CHAPTER 1: INTRODUCTION

1.1 Introduction:

Kingdom of Saudi Arabia (KSA) being one of the most important countries in Gulf has ventured into an all new journey with vision 2030. This lead the country to rethink its development goals in all sectors of economy. Construction being one of the biggest contributing sector for economy need to be rectified on many areas of its operations and contributions. Claim management is one such factor that drastically has negatively impacted the progress.

The research will highlight major issues pertaining claims, its causes, its management and solution. The conceptual framework will identify the basic focal areas of concerns and improvements. Measure to rectify will be coded to identify the best practices at all levels of the process.

1.2 Background:

The Kingdom of Saudi Arabia (KSA) is one of the most important countries in the Gulf region. Aside from its position as one of the world's largest petroleum exporters, with 18% of global petroleum reserves (OPEC, 2013), the Kingdom has sought to diversify its economic portfolio under its Vision 2030 plan. The KSA construction sector is poised to play one of the most important roles in realising this Vision, with the annual output of the construction sector becoming one of the largest in the region.

Construction claims and cost overruns have been endemic in the KSA, particularly on public sector projects. However, little research has been conducted with respect to construction contract delay claims and their resolution in the KSA. Research on delays on public sector projects is both timely and relevant for the KSA construction sector. Attempts are being made by government and industry bodies to make the sector more efficient, by adopting new methods of procurement and working, reducing bureaucracy and slow decision making, and reducing the number of disputes that lead to inefficiency, cost overruns and delays on projects.

This research focuses on identifying and documenting the best practices related to the settlement of construction claims in the construction sector that can make project claim settlement processes more efficient. The research investigates the causation of these conflicts and developed a best practice framework that addresses the perspectives of KSA parties involved in the process. The development of this framework required a deep understanding of the interdependencies,

complexities, decision-making processes and functioning of the factors involved, including the actors, processes, procedures, and the systems.

Construction is very important to developed and developing economies. It is one of the most significant contributors to a nation's overall economic growth. According to the UN International Labour Organisation (ILO), the industry accounts for approximately 10% of global gross domestic product (GDP) with about 180 million employees, or 7% of global employment (ILO, 2015).

The output of the sector has grown by 67% globally over the past decade, with an annual growth average of 3.4%, reaching a value of US\$10.0 trillion as of 2020 (Cision PR Newswire, 2015). It is estimated that the industry will have a \$10.5 trillion annual output of construction work put in place by 2023, with a forecast annual growth rate (CAGR) of 4.2% until 2023 (Business Wire, 2021) and an annual global infrastructure investment of US\$3.7 trillion until 2040 (Market Prospects, 2021). The construction sector is an important part of post Covid-19 recovery. Advanced economies had the fiscal space at the beginning of the crisis to implement effective stimulus measures, which involve investment in infrastructure as a stimulus for growth. The Kingdom of Saudi Arabia (KSA) has announced plans to stimulate the economy by investment in infrastructure and buildings. Such an approach requires a sector that is less reliant upon foreign enterprises to deliver the design and construction services, by capacity building in the construction sector.

The construction sector covers a broad variety of project types, each involving a diverse range of professions that include technical, skilled, and unskilled workers. It also requires planning, coordination, communication, control, and implementation in team settings that typically involve considerable long-term planning processes (Wood, 2001). The sector has become more complex and fragmented through its long and interdependent supply chains, with more regulatory requirements, and increasing demands imposed by clients on design and construction teams¹.

This complexity has made project delays and contractual claims common occurrences in construction projects (Yates and Epstein, 2006), as the conflicting interests of various project parties are often conducive to instigating disputes (Yiu and Cheung, 2006) that can affect

¹ The Oxford English Dictionary defines the word 'complex' as "comprising different and linked parts and not simple to understand; complicated or intricate". The term 'complex' is derived from the Latin cum (together, linked) and plexus (braided, plaited). The term 'complex' originates from the Latin word complexus, which means entwined or twisted jointly and is defined as "a collection of parts, an item consisting of two or more elements – or two or more variables" (Ireland, 2007).

profitability (Awakul and Ogunlana, 2002). Construction projects are typically one-off processes with an inherently fragmented nature. They face challenges in communication and collaboration, constraints in budget and time, uncertainties surrounding external factors, and issues with management and organisation, all of which make disruptions and delays quite common.

Construction is a dynamic system in which the decision-making environment is complex and influenced by:

- (i) the number of elements/packages in the system,
- (ii) the number of connections between them and their interdependence,
- (iii) the presence or absence of random variation,
- (iv) the degree to which uncertainties affect the behaviour of the system.

To this list can be added the number of controllable and uncontrollable events influencing the system. For example, the weather is uncontrollable, and political events can have an impact on large projects. This adds to the complexity of control, and the need to effectively manage the interfaces, particularly between design and production.

The nature of construction means there are many uncertainties in the process, including many bureaucratic procedures. An example is a design team that produces a design and specification at the tender stage that is often incomplete; having a design that is only 60% complete at the tender stage creates uncertainty and risk. The bidders must interpret the design requirements and make assumptions to produce a tender. The client team analyses the tenders and selects the contractor that offers the most attractive price and delivery programme. The contract award is made, and the contract terms and conditions reflect the project requirements. Whilst this is the perfect world, the reality is that many projects in KSA run over budget and over time. This is partly a function of the increased complexity in the design and construction process and the KSA environment, influenced by regulatory requirements, and culture.

Enterprises in the construction sector face tough economic, regulatory, competitive, and organisational challenges that further complicate the fulfilment of project performance milestones. This situation is reflected in the growing number of global industry contractual claims over time. Hussein (2014) identified over 10,000 projects that have involved legal disputes in the Gulf region.

In addition, a 38% increase in the average value of Middle East construction contract disputes between was observed between 2019 and 2020 (Global Construction Review, 2021).

Project delay claims arise when project performance does not meet scheduled milestones. Deviations from project schedules have many causes, including poor production planning and management activities, flawed information, incorrect assumptions made at the bid stage, trade stacking, inclement weather, adverse site conditions, excessive client changes, failure to adhere to the contract conditions, such as late payments.. Such causes contribute to project delays and cost increases (Gulezian & Samelian, 2003; Kartam, 1999). Whilst the head contract is between the client/sponsor and the principal contractor, the principal contractor is reliant upon complying with the contract conditions between the trade contractor/work package contractors in the supply chain. This adds to the complexity of project delivery.

The practices adopted to resolve construction project disputes and settle claims are widely regarded as an underlying problem in the KSA construction sector. Al-Ghafly and Al-Khalil (1999) and Assaf and Al-Hejji (2006) concluded that approximately 70% of all KSA domestic public sector projects experience delays, with the average time required to resolve disputes increasing to one month, which resulted in further delays in the resolution processes. (Deloitte, 2020). Jannadia et al. (2000), stated that disputes were common in construction projects; little has changed in the past 21 years since his research was undertaken with contractual claims still endemic.

Growing project costs are linked to many of these disputes, with researchers estimating these costs at more than three million SAR (Alsharif, 2013). At the same time, intense competition has forced contractors to bid with low-profit margins to win contracts, often improving their profitability through contractual claims. Often incomplete and poor-quality design drawings and specifications have increased the number of contractual claims (Ho and Liu, 2004). Finally, there is consensus among project participants that construction claims are the most destructive and unpleasant events hampering project progress. (Ho and Liu 2004).

1.3 Characteristics of claims for an extension of time and cost reimbursement:

Construction projects have become more complex due to increased compliance standards, the use of new technology and changes made during the construction phase (Abdul-Malak, El-Saadi and Abou-Zeid, 2002). Koskela (1992) described the characteristics of construction projects as being

one-of-a-kind, with site production processes that employ temporary organisations. This is an understatement in the KSA construction sector, as it relies on multiple layers of interdependent speciality contractors and material and component suppliers that must meet stringent quality standards and are subject to a regulatory and governance structure that has increased the requirements placed upon design and construction teams. Moreover, ensuring safe site working and health conditions has now become paramount, with steep penalties incurred for project violations. In response, novel digital processes have helped to address these challenges through using collaboration platforms that have improved the information-sharing capabilities between project parties.

Identifying and analysing the causes of construction delays is an integral part of claim resolution (Janney et al. 1996). Semple et al. (1994) defined *claim* as a request for compensation for damages incurred by any party to a contract. Matt (2010) argued that while the theory surrounding such claims is elementary, the topic of claims themselves is complicated due to their interdependent nature. Thus, the most critical aspect of construction delay claims is that while their effects are evident, their causes can be complex. Contractors should understand the causes of delays and present sufficient information to support claims, while clients also must comprehensively track and manage claims. (Abdul-Malak et al. 2002; Singh & Sakamoto 2001; Scott 1997). Finally, to settle claims without resorting to litigation, the impact, timing and effect of the causes for delays must be determined. (Vidogah and Ndekugri 1997).

1.4 KSA construction sector overview:

The KSA has undergone significant economic reforms since the 2008 financial crisis. The resultant oil price volatility of the crisis spurred Saudi Arabia toward various reforms and infrastructure investments in order to build a more modern economy focused on reducing dependence on oil revenues, lowering the unemployment rate and modernising sectors through digitalisation. The International Monetary Fund (IMF) has called the KSA's *Vision 2030* programme a "bold reform" due to its significant investments in infrastructure, housing, education and medical facilities.

The KSA construction sector is at the heart of these intended physical and social infrastructure reforms. However, challenges for the sector include that it has not undergone sufficient modernisation, has a poor record in terms of health and safety and timely project delivery, and consistently experiences profligate contractual disputes. Moreover, recent declines in oil prices

and high fiscal deficits have affected KSA government construction sector spending. In 2016, domestic sector growth was only 1.9%, much lower than the average annual increase of 6.2% between 2012 and 2015 (Cision PR Newswire, 2017). In 2017, the sector contracted by 0.2% but grew between 2018-2021.

The fact that the KSA government intends to make the construction sector central to its plans is reflected in its National Transformation Program (NTP) 2020 and the Vision 2030 documents and its development of new infrastructure projects such as seaports, railway lines, airports and various manufacturing, energy, utility and other transport facilities. (Cision PR Newswire, 2017)

However, with such heavy reliance on the sector and large investments, lengthy litigious behaviour could break the continuity of progress. The KSA construction sector must focus on constructing projects on budget and on time and avoiding contractual disputes. However, the KSA construction sector is immature, with a track record of slow payments by the public sector and client approval processes, burdensome bureaucratic procedures, poor quality design information, and a shortage of both KSA professional, and construction workers. These factors all contribute to lengthy, confrontational, and unsuccessful settlement processes.

1.4.1 Construction sector characteristics:

- Projects have become more complex as design teams have adopted new materials and technologies. Digitalisation has helped to assist the design process but has had low impact on the site construction phase, except in specialised areas.
- The sector is fragmented and has a multi-layered sub-contracting system. Most speciality contractors rely on transient foreign workers, which has resulted in challenges for health and safety and quality control.
- Reliance upon overseas construction companies to build the country's megaprojects, sometimes in collaboration with local contractors, has resulted in more contractual claims and litigation using western-style construction contracts.
- KSA manufacturers and suppliers often cannot supply the core industry materials, so the demand for imported goods and materials is high. This increases uncertainty and risk, which often evolves into delays.

- Approaches to design and construction based upon procedures and contracts used in developed countries is common. However, such procedures are not necessarily applicable to the KSA construction sector, particularly given that Sharia law is the governing law.
- Construction often commences on site with incomplete design drawings and production information, with many scope, scale, and detail changes issued only during the construction process. This results in disputes and contractual claims for reimbursements of additional costs incurred by contractors.
- The fragmented organisational structure of the KSA construction sector and the use of inappropriate contract types often leads to a lack of trust between parties.
- The types of contracts used are often inappropriate and lack details and clauses that address structured conflict settlements. Typically, project beginning, and end dates are specified, but no set preliminary milestones are formulated or formally agreed upon by parties that can be used to estimate progress.
- Approval and renewal processes are generally tedious and time-consuming and serve as a bureaucratic layer that adds complexity to the entire system.
- Shariah law is the governing law that settles all legal conflicts. However, there is typically a “missing link” between construction contract clauses and this law, as no such interpretations of Shariah law are added to contracts.

As a result, the KSA claim settlement processes has become long, slow, expensive, and inefficient. In response, this research investigates how the claim process can be improved using best practice that can be adopted at the time of project initiation to assist in settling claims.

1.5 Identification of gaps in the literature:

Several studies have investigated the causes, effects, and implications of contractual delays on the KSA construction industry. However, little attention has been paid to the mechanisms of how contractual claims for extensions of time, contract duration or financial reimbursement are formulated, analysed, agreed upon, and settled after they have occurred. Importantly, despite increased adoption of digital technologies in the KSA, there is no evidence in the literature to

suggest how digital technology can substantiate the case for the formulation and agreement of contractual claims.

The claim settlement process in the KSA is poorly documented and lacks clarity in its format and procedures. One reason for this concerns the proliferation of bespoke contracts, coupled with modified clauses that apply to local conditions by adapting FIDIC² standard conditions of contract forms, which often leads to confusion and a lack of clarity. Most importantly, any information about contract disputes has legal implications and the requirement for commercial confidentiality, which means only information about claims that are settled by litigation appear in the public domain. Hence, a gap exists in the knowledge of the process and practices from project initiation to claim settlement as an interdependent system.

1.6 Research justification:

The challenge of adopting approaches to more effective dispute resolution is a major impediment to construction project completion in the KSA. This issue often results in a significant drain on resources (Fenn 2007) that can increase project durations and expenditures and affect participant relationships in the short and long term. This is not just an issue in the KSA, as the global number of construction sector disputes is trending upward, which has led to cost and time overruns due to the time involved in their resolution (Allen et al., 2012). Fenn (2007) pointed out that the lack of research in dispute resolution in the construction sector needs to be addressed.

The KSA construction sector is still heavily reliant upon foreign contractors and design consultants to design and construct major projects. The indigenous KSA construction sector has few major construction enterprises with the technical capacity to deliver big projects, but the government have a policy to build capacity in the local constructions sector. There is heavy reliance upon using an immigrant workforce for site production caused by a local labour shortage of people willing to work on job sites. While guidelines for resolving contractual disputes involving state and foreign contractors are in place, these often fall short of presenting effective solutions. Thus, a clear framework code of best practice can help the construction industry to better understand the

² FIDIC- Federation Internationale des Ingenieurs Conseils (International Federation of Consulting Engineers) Conditions of Contract

underlying causes of delays, address the concerns of parties, and increase the transparency of the processes.

1.7 Research question:

This study addresses the following research question:

How can the contractual claims settlement processes be improved for the effective settlement of claims for KSA public sector construction projects?

The fundamental question considers if a systemised approach and code of best practice can mitigate the effects of claim settlement processes for the KSA construction industry. The aim is to develop a framework for a code of best practices for the settlement of construction claims in the sector.

Important sub-questions include:

1. What are the causes, drivers, enablers, disruptors, and outcomes of construction projects relevant to contractual claims in the KSA construction industry?
2. What characterises construction practices in the KSA (e.g., immaturity, dearth of skilled labour, dependence on foreign expertise, uncertain supply chains, poor safety and health standards, poor quality control, burdensome and inefficient bureaucracy)?
3. What are the characterises of claim settlement procedures in the KSA (e.g., lack of legal expertise, legal complexity, Shariah law, cultural aspects of conflicts, contractual ambiguities)?
4. How can interdependence, complexity and deterministic decision-making in construction systems be interpreted?
5. What factors should be included in a systemised and standardised procedure to improve claim settlement procedures?

The research focuses on public sector commissions of construction projects in a public sector context. The public sector has been chosen because of the proliferation of contractual claims that occur and their importance in delivering social projects for KSA.

1.8 Aim and objectives:

The research objective is to reduce the negative effects of contractual claims settlement processes for the KSA construction sector and to improve these processes through the adoption of best practice. A best practice framework will be designed to mitigate these effects by identifying and investigating potential improvements. The overarching intent is to help the sector reduce the amount of time and resources spent on costly settlement processes.

The objectives include:

Objective 1: To identify the negative effects and impacts of disruptions, delays, and claim occurrences during construction projects.

Objective 2: To identify the primary causes of disruptions, delays, and claim occurrences in the Saudi construction industry.

Objective 3: To explore the existing practices prevalent in the Saudi construction industry from project initiation to claim instigation and from claim instigation to claim settlement.

Objective 4: To investigate factors that hinder the course of and inefficiencies in the Saudi claim settlement process.

Objective 5: To investigate the drivers, issues, enablers and disruptors that influence the outcomes of construction projects in the KSA.

Objective 6: To understand the interdependence, complexity and approaches to construction project planning and performance through the life cycle of projects.

Objective 7: To develop a best practice framework to improve the KSA claim settlement process.

1.9 Underpinning theory and research scope:

The underpinning theory of the research is founded upon the use of using a systems approach to better understand the development of the settlement process. Senge. P (2020) describes the fundamental rationale of systems thinking as being to understand how problems and situations, which are the most vexing, difficult, and intransigent, come about, and to give some perspective and insight as to what can be done differently. General system theory is a way to address the increasing complexity of problems. It was presented as a way of thinking that allows for the study

of interconnections among systems and accounts for the nature of open systems which interact with their environment.

The scope of this research was bounded to focus on time delays due to claims for KSA public sector projects.

- The scope is limited to the KSA construction sector and its performance as well as the impediments and issues related to its claim settlement procedures.
- Only public sector projects were investigated.
- The participants were limited to senior practitioners involved in KSA construction projects.

This research was limited by the time and duration constraints of construction contracts and did not examine cost reimbursement claims for issues that were not time dependent. It also focused on the contractual arrangements between clients and principal contractors and not on those between principal contractors and other parties in the construction supply chain. Contribution to knowledge

This research reflects on certain socio-political challenges specific to the KSA construction sector. As the KSA's legal system differs from the rest of the world, it is grounded in Sharia law, this research can assist in identifying the problematic issues related to this system. The weaknesses of certain procedures and lack of information technology usage was examined in order to develop the best practices framework.

The research makes five contributions to the literature:

First, it explores the underlying causes of claim disputes through qualitative and quantitative interview and survey questionnaire data.

Second, it explores the practices employed from project initiation to claim occurrences and from claim occurrences to claim resolution through interviews that highlighted areas of improvement.

Third, it ranks these areas of improvement and rates the recommendations needed to achieve the needed improvements through quantitative analysis.

Fourth, it helps build the cause-and-effect relationships and interdependence within the system to understand the complexity of aligning a best practice code to achieve the research objective.

Fifth, it proposes a framework of best practices to mitigate claim settlements in KSA. The measures were designed using primary (qualitative and quantitative) and secondary (literature and other documentation) preventive and corrective strategies.

Finally, it recommends avenues for further investigation and research for exploring areas of improvement and for academic and industrial applications of this work in the KSA.

1.10 Research method:

A research method explains the data collection and analysis procedures employed to fulfil the research objectives. For this research, a two-stage mixed-method approach was adopted. First, qualitative data were collected from KSA professionals using semi-structured interviews. These data captured the underlying issues and challenges these practitioners routinely face and explored the causes of project delays; the related disputes, claims and effects; and the inefficiencies prevalent in the claim settlement process. Second, these data were used to design a quantitative data collection approach, in which survey data were collected to rank factors and guide recommendations for categorising and designing a code of best practices for claim settlement.

1.11 Thesis structure:

Chapter 1: Introduction

This chapter introduces the research problem, identifies gaps in the literature, justifies the need for research, and presents the study aims and objectives, research questions, limitations, contributions to the literature and research method.

Chapter 2: Literature Review

This chapter reviews the literature on construction project disputes, conflicts and delays, specifically with respect to KSA public projects, the causes and impacts of delays and claims on these projects and claim settlement procedures and their associated barriers.

Chapter 3: Interrelationship and Complexity

This presents an interrelationship diagram representing complexity and interdependence. It also discusses underlying theories of complexity and chaos in order to explore the causal relationships between the identified sub-systems and processes and the issues relating to each.

Chapter 4: Conceptual Framework

It presents a cause-and-effect diagram, highlights the issues that relate to different causal categories and introduces the flow chart for the claim management process that was used to develop the improvement categories. The causal and improvement categories were then aligned with the recommendation categories in order to shape the conceptual framework for the best practices code for claim settlement.

Chapter 5: Overview of the Kingdom of Saudi Arabia Construction Sector

It summarizes KSA, its economy, construction sector, procurement system, contract types, the conflicts, claims and disputes in KSA, dispute resolution methods, It also looks at KSA's role in the Middle East and overview about construction sector and projects in that region.

Chapter 6: Research Methodology

This chapter describes the research method and approach applied in this study. It elaborates on its philosophical position and introduces its data collection and analysis methods.

Chapter 7: Qualitative Data Analysis

It explains the qualitative data collection method and analysis process applied in this study. It also summarises the analysis and main study findings in tables, graphs and charts and discusses how the data were categorised to align with the quantitative analysis process.

Chapter 8: Quantitative Data Analysis

This chapter focuses on the second data collection method (quantitative) that was grounded in the qualitative data. It outlines major causes, effects, and recommendations and ranks these recommendations to assist in designing measures to help achieve the needed improvements. It summarises the analysis and findings in tables, graphs and charts and categorises the findings to align with the recommendation sections and designing measures.

Chapter 9: Best Practices Code for KSA Claim Settlement Processes

This chapter explains the conceptual framework design that structured the required improvement areas in the process from project initiation to claim settlement. The ranked and categorised recommendations were used to design measures for a best practices code to populate the structure

of the conceptual framework and achieve needed improvements. These measures were designed using both primary and secondary data sources.

Chapter 10: Conclusions

Summarises the research findings of the previous chapters, reflects upon the best practice code framework developed in this study and presents the conclusions and recommendations of the research as well as recommendations for future study.

1.12 Summary:

The chapter summarises overall construction sector operations, figures and issues especially with reference to claims, causes of claims, claim management issues and needed improvements. Gap in literature was discussed to justify the present research regarding KSA. The aim and objectives to achieve were identified. Research questions to achieve these objectives were also identified. The scope and limitation were discussed at end along with thesis structure.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction:

The chapter presents theoretical underpinnings of the research and considers the contractual claim settlement process in the KSA. Causes and effects of delays on KSA construction projects and contractual claim settlements approaches were viewed. It provided a context to the research that is grounded in the literature to understand the problems, barriers and shortcomings in existing processes. This will help in identifying gaps in the knowledge that has raised the need for present research.

2.2 Contextualising the issues through the literature:

The literature review discusses the theoretical underpinnings of the research and considers the contractual claim settlement process in the KSA. Causes and effects of delays on KSA construction projects and contractual claim settlements approached through negotiation without arbitration or litigation were considered. It provided a research context grounded in the literature, in understanding the problems, barriers and shortcomings in existing processes and in identifying gaps in the knowledge base.

Any contract negotiation involves a process based upon six parts: 1) a system that incorporates the method of communication, 2) claimants, 3) decision makers, 4) data and information, 5) competencies, and 6) bias in the decision making. A fundamental assumption for the claim settlement processes is that it is always linear, with accurate data available to both parties and all interdependencies managed. This is not correct, particularly with the dynamic nature of construction projects, the interface between design and construction, and the numerous parties involved in the design process and the supply chain. Moreover, both controllable and uncontrollable events are typically present in any given construction process, such as weather and other unforeseen factors.

This chapter examines the causes of construction delays, interruptions and claims across developing and developed countries in order to investigate the dynamics of the claim settlement process and to explore how this process could be improved in the KSA. It discusses claim settlement issues, information asymmetry concerns and the roles different stakeholders play in the process.

The review was conducted primarily to respond to the following question: *How can measures to codify best practices in the construction claim processes be structured?* This exercise is important in shaping the framework for this research and in identifying improvements and addressing weaknesses in the KSA context.

An issue that arose for this review concerned the availability of secondary data sources—namely, published research on claim settlement and management approaches for the KSA. The dearth of research on this topic and on how the KSA construction industry approaches new technologies showed no literature for this review. In addition, few studies have been conducted concerning KSA industrial standards, contract details and the success of the KSA in adopting strategic measures to address these challenges. It is understood that information about contractual claims is highly confidential and sensitive, particularly in the public sector. This means that the literature is very limited.

2.3 KSA construction industry delays:

Whilst any settlement process involves parties engaged in a negotiation, a challenge particular to construction claims is that they arise from a range of points along the supply chain. Typically, contracts between clients and contractors stipulate that all negotiations must be conducted through the principal parties.

One major challenge to the KSA construction industry lies in reducing delays that can increase project costs (Sweis et al., 2007). Falqi (2004) described construction delays as 'cankeworms' that destroy the fabric of the construction sector, and Al-Ghafly and Al-Khalil (1995) and Assaf and Al-Hejji (2006) conducted research that concluded that approximately 70% of all KSA public sector construction projects have experienced some sort of delays.

A literature search identified studies that focused on project delays in the KSA, including: Assaf, Al-Khalil and Al-Hazmi (1995), Al-Khalil and Al-Ghafly (1999), Al Kharashi and Skitmore (2009), Assaf and Al-Hejji (2006), Al-Ghafly (1995), Falqi (2004), Mahamid, Al-Ghonamy and Aichouni (2015), Elawi et al. (2015), Albogamy, Scott and Dawood (2012), Al-Emad et al. (2017), Mahamid (2014) and Alzara, M. et al. (2016). These studies highlighted the causes of project delays in the KSA construction industry from a range of stakeholder perspectives, including those of clients, principal contractors, design consultants and engineers. Table 2-1 lists these studies as

an overview of the causes and challenges of project delays in the KSA construction industry.

However, the literature frames the claim settlement system as discrete and independent, a position that largely ignores the complexity of this system and one that takes a linear approach to the variables involved. As a result, factors such as interdependence, feedback relationships and cause and effect loops are either not considered or are seen as linear systems independent of each another. Thus, causes such as inefficiencies in the pre-construction and design stages are not investigated as non-linear, dynamic factors that contribute to the issues that can result in changes and delays. The claim settlement process has tended to be studied in isolation, and the effects of substandard practices in the construction phase that can result in poor documentation and contract drafts have not been investigated as causal relationships.

No	Authors (year)	Topics	Research method	Data collection	Statistical analyses and tests
1	Assaf, Al-Khalil and Al-Hazmi (1995)	Causes of delays in large building construction projects.	56 causes grouped into nine areas and ranked by respondents	Survey questionnaire	Relative importance index, Spearman rank correlation coefficient
2	Al-Khalil and Al-Ghafy (1999)	Delays in KSA public utility projects	60 causes categorised into 6 groups. Related frequency to contractor grading, extent of and responsibility for project delays	Field survey	Kendall coefficient of concordance, chi-square test, frequency index, severity index and importance index
3	Al-Kharashi and Skitmore (2009)	Causes of delays in KSA public sector construction projects	112 causes were classified into 6 groups and ranked by respondents	Field survey	Two-way analysis of variance (ANOVA)
4	Assaf and Al-Hejji (2006)	Causes of delays in large construction projects	73 causes classified into 9 groups and ranked by respondents	Field survey	Frequency, severity and importance indices, Spearman's rank correlation
5	Al-Ghafly (1995)	Delays in the construction of KSA public utility projects	60 causes classified in 6 groups and ranked by respondents.	Field survey	Frequency and severity indices, Spearman's rank correlation
6	Falqi (2004)	Comparative study of construction delay factors in KSA Arabia and the UK	67 causes classified in 4 groups ranked and compared between KSA and UK.	Field survey	Frequency, severity and importance indices
7	Mahamid, Al-ghonamy and Aichouni (2015)	Risk matrix for delay causes in KSA construction projects	35 delay causes were ranked	Questionnaire survey	Severity and frequency levels mapped by risk
8	Elawi et al. (2015)	Major factors causing construction delays in Mecca	Delay causes identified through real-time quantitative performance analysis of 49 projects and compared to previous studies	Literature review	Frequency and severity indices
9	Albogamy, Scott and Dawood.	Construction delays in the KSA	63 delay factors classified to four categories and ranked by respondents	Field survey	Importance index consisting of frequency and severity indices

	(2012)				
10	Al-Emad et al. (2017)	Ranking of delay factors for Makkah's construction industry	37 delay factors were ranked	Survey questionnaire	Average index score of each factor and standard deviation to decide their ranking
11	Mahamid (2014)	Micro- and macro-levels of dispute causes in KSA residential building projects	29 direct dispute causes and 32 indirect dispute causes were ranked	Field survey	Severity index, weighted mean, standard deviation, coefficient of variation
12	Alzara, M. et al. (2016)	Used PIPS to minimise causes of delays in KSA construction projects (university case study)	27 common delay factors across construction projects compared to twenty-seven delay factors at university	Literature review and stakeholder interviews	Best Value, Performance Information Procurement System (BV PIPS)

Table 2-1 Summary of research papers regarding causes of delay in the KSA

The literature also identifies causal factors but ignores any non-linear characteristics. However, systems can be greater than the sum of their parts and can exhibit dynamic, emergent patterns that inherit the uncertainty and unpredictability of complex systems (Denk and Pfneissl 2009; Schoeneberg 2010) for which the roles of each component must be understood with respect to their interdependence.

A mental shortcut that allows people to make judgments quickly is called heuristics and decision-making cognitive bias. The concept of cognitive bias was first introduced by psychologists Kahneman and Tversky (1972). They articulated that the brain tends to process information based on personal experience and preferences, information used in decision making and judgment is inherently subjective. Assaf et al. (1995), suggests this research helps to explain some sources of delays and the severity of the causes as interpreted by stakeholders.

Cognitive bias is an important dynamic in information processing and interpretation that can affect individual decision making and judgement. This effect often leads to oversimplification of problems and a focus on finding easy solutions instead of investigating the more deeply rooted aspects of problems (Wilson, 2002). Any application of a uniform approach to solving challenges can lead to cognitive bias (Evans, 2003; Keren and Teigen, 2004; Larrick, 2004; Thaler and Sunstein, 2008).

In terms of conflicts, cognitive biases related to dispute and claim resolution play a large role and are manifested in the following actions (Thaler, 2015):

1. *Anchoring*, i.e., decision making that relies on the first set of information received.

2. *Optimism* and *overconfidence*, i.e., individuals that have unjustified confidence in the accuracy of their judgement.
3. *Status quo*, i.e., a reluctance to deviate from a current status.

Cognitive bias plays a prominent role in the decision-making abilities of project managers. Regarded as a “deadly sin” by Pinto (2013), this bias can act as barrier to raising appropriate and timely responses to early warning signals of likely conflicts (Haji-Kazemi et al., 2015). Whilst cognitive bias can jeopardise the quality of decision making, it is not well-studied in the construction literature with respect to dispute and conflict management (Li and Cheung, 2018). Cognitive bias has therefore been ignored as causal factors.

The literature review was a ranking of factors responsible for delays, interruptions and conflicts in a linear fashion using a single set of data categories. This approach considered each system and stakeholder group in isolation, as the investigation of each system as a sum of subsystems in which each is interlinked and interrelated to other subsystems is largely ignored.

2.4 Research into the causes of delays in the KSA:

The studies listed in Table 2-1 are discussed below to both highlight their contribution and their shortcomings for the research. To avoid repetition, not all the studies are reviewed here.

2.4.1 Assaf et al. (1995):

Assaf et al. (1995) investigated delays for large KSA construction projects in two stages: the first identified 56 causes of delays and the second ranked their importance. The causes were grouped into nine areas: materials, manpower, equipment, financing, and environment, design changes, government relationships, contractual relationships and scheduling and control techniques.

The authors highlighted the conflicting stakeholder perspectives that arose with respect to causes of delays, in which each party attempted to frame their role in the process in a positive manner. For example, the contractor participants ranked drawing preparation and approval and approval of sample material as significant causes for delays in the scheduling and control group. At the same time, the design team participants ranked unreliable estimation of time and resources as a significant factor in delays. Each stakeholder (i.e. client, investors, design team members, the principal and specialty contractors) considered these causes from their point of view and, in turn,

placed responsibility on the other parties, which is bias.

A shortcoming of this study was its lack of attention to the project delivery process (i.e., design, tender, construction, completion, and handover). The focus was solely on production delays, which overlooks the fact that many delays may be caused by incomplete design information, design changes, or substandard tendering.

2.4.2 *Al-Khalil and Al-Ghafy (1999):*

Al-Khalil and Al-Ghafy investigated the causes for delays for KSA water and sewage (WS) public utility projects. An important question is whether project type and scale factors affect characteristics that can result in delays and cost overruns. The authors identified several underlying causes for delays, including budget and financial problems of the project sponsor, obtaining work permits for foreign workers, using low bid as the sole criteria for contractor selection, and owner miscalculation of project deadlines. These were found to be the main factors influenced by the project sponsor in KSA public projects. The authors also found that miscalculation of project duration may have been caused by optimism bias, poor planning, or lack of information. Interestingly, burdensome bureaucracy and slow decision making was not among the findings.

The authors' second research objective concerned linking the frequency of delays to contractor classification, project value and project duration. The results showed that this frequency correlated with classification grade but not with geographic region, as the extent of delays was severe and was often associated with plan duration (i.e. shorter projects incurred greater delays due to miscalculated duration). In contrast, project size was found to be significant (i.e., shorter projects took longer to complete). Project clients and consultants identified contractors as the party most responsible for delays, while contractors maintained that clients were responsible. The major contribution of the work was to outline the factors underlying construction delays, such as obtaining permits and the complicated procedures and approvals required, all of which tend to increase project complexity. Two important findings underpinning the research is the question of optimism bias in the early stages of project planning, and the influence of bureaucracy³ on the

³ The term bureaucracy refers to a complex organization that has multi-layered systems and processes controlled through a regulatory system that involves rigidly following procedures and process. The systems effectively make decision-making slow. They are designed to maintain uniformity and control within the organisation. A bureaucracy describes the methods that are commonly established in governments and large organisations.

delivery of KSA public sector projects.

The research did not acknowledge the importance of factors such as the role of the state in influencing the project sponsor, client communication, the tendency for standard forms of contract in the public sector to be heavily modified to ensure risk is passed to the contractor. It overlooked the influence of bureaucracy and the effects of power dynamics.

2.4.3 *Falqi (2004):*

Falqi (2004) considered a range of project stakeholder perspectives on the causes of delays in the KSA and the UK. The author presented a somewhat vague interpretation of these differences, attributing them to conditions such as the state of the economy, weather conditions, government regulations, industry norms and industry knowledge. However, these perspectives were neither further analysed nor tested for validity. And while the study documented the differences between the two countries, it neglected to highlight lag-related factors and recommend feasible improvements processes. However, the author did suggest that causal factors in the KSA could be addressed through improved government policies and support, procedural details, industry norms and technology.

2.4.4 *Al Kharashi and Skitmore (2009):*

Al Kharashi and Skitmore considered the problem of length of delays for KSA construction projects. Their main research finding was that complex, large, and innovative projects require more qualified and competent professionals and that a lack of experienced site and client management staff results in delays.

They presented some notable findings; they found a low level of competence towards strategic planning, scheduling and organising labour, materials and equipment in the KSA. Low levels of client technical knowledge and a lack of communication between clients and consultant as the most prominent shortcoming, with client's often unaware or uninformed about site conditions and project progress. They highlighted disagreement between parties on the causes of delays. Their view was that the KSA construction industry was poorly developed. It was very fragmented with many micro and small local KSA enterprises, that often operated across industries. There were few very large KSA contractors with over reliance upon foreign workers and foreign contractors.

2.4.5 Alzara et al. (2016):

Alzara et al. (2016) compared delay-related factors across the KSA with particular attention to delays for a KSA university project. A client interview revealed that out of 22 campus projects, 17 were delayed between plus 50% and 150% on the contract duration. They examined the causes for the delays, compared them with other KSA projects and discussed applying the best value approach and the performance information procurement system (PIPS) as methods for addressing these issues. The main contribution of this study was to highlight the use of performance control and measurement systems in the KSA. For the research, this translated as a potential avenue for improving the claim settlement process. However, such an approach and performance advancements have yet to be applied in the KSA. The method of procurement is seen as a factor in the proliferation of contractual claims.

2.4.6 Summary of delay causes in the KSA:

The above discussion followed a deductive approach to presenting empirical data to analyse and develop theoretical inferences. Most of the studies ranked the same set of factors (see Table 2-2).

Causes of delays (ranked as in the top ten by study participants)	Selected research papers (numbers refer to Table 2-1)											
	1	2	3	4	5	6	7	8	9	10	11	12
Drawing preparation and approval	✓			✓					✓	✓		✓
Late contractor payments/owner cash flow and financial difficulties	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Poor selection of procurement method	✓							✓				
Excessive bureaucracy in project-owner organisations	✓				✓							
Labour shortages and inadequate skills (i.e. poor quality and inefficiencies)	✓	✓		✓	✓				✓	✓	✓	✓
Lack of qualified and experienced personnel			✓	✓					✓	✓	✓	
Excessive number of change orders				✓							✓	
Changes in project scope made by client					✓	✓						
Difficulty in obtaining work permits for workforce		✓	✓		✓							
Lowest bid (low performance) as the selection criteria		✓		✓	✓		✓		✓			✓
Effects of sub-surface conditions		✓			✓							
Ineffective contractor planning and scheduling		✓		✓	✓	✓			✓	✓	✓	

Improper project technical study in bidding stages by contractor					✓					✓		
Late preparation of contractor submittals					✓							
Owner settlement of contractor claims, slow and biased					✓	✓						
Changes in material type and specifications during construction/ material delivery delays			✓		✓		✓					✓
Poor contract management							✓		✓	✓		
Duration of contract period				✓			✓				✓	
Material price fluctuations/inflationary pressure							✓					
Land acquisition								✓				
Lack of contractor expertise and qualified personnel				✓				✓			✓	✓
Sub-contractor work delays									✓			
Poor communication and coordination between parties			✓			✓			✓	✓	✓	
Poor estimation practices											✓	

Table 2-2 Ranked causes of construction delays in the KSA

Ranks the top ten causes for project delays by frequency and number for the studies listed in Table 2-1.

No	Top ten highly ranked causes of KSA construction project delays in selected studies	Frequency
1	Late contractor payments/owner budget and financial difficulties	10
2	Labour shortages and inadequate skills (i.e., poor quality and inefficiencies)	8
3	Ineffective contractor planning and scheduling	7
4	Lowest bid (low performance)	6
5	Drawing preparation and approval is slow	5
6	Lack of qualified and experienced personnel	5
7	Poor communication and coordination between parties	5
8	Changes in material type and specifications during construction/ material delivery delays	4
9	Lack of contractor expertise for project type	4
10	Difficulty in obtaining work permits	3

Table 2-3 Top ten causes of delay in the KSA in selected studies

The highest-ranked factor, late contractor payments/owner budget and financial difficulties, was mentioned in ten papers. This highlights the financial challenges contractors face, and how on time interim payments are crucial for contractors in maintaining cash flow. The second-highest ranked factor was the availability of skilled labour. The KSA largely relies upon foreign workers for construction project staff (Al Kharashi and Skitmore, 2009), and delays in obtaining work permits often slows the process. An unskilled workforce can lead to a poor project quality with time and cost implications.

Ineffective contractor planning and scheduling and lowest bid (low performance) ranked third and fourth among the causes, respectively. In the KSA, public project contracts are frequently awarded using lowest bid tendering processes, which are a root cause of poor KSA contractor performance. For all public sector projects there should be a pre-qualification process. Contractor experience and expertise is often not vetted in detail in a low-bid procurement system.

2.5 Causes of delays in countries:

Drawing comparisons between common causes of delays across countries can help in identifying differences between and links to processes in the broader context of country-level practices, thus helping to codify best practices for claim mitigation. While the causes of construction delays have been widely studied, researchers have not put forward the best approach to the settlement of claims. The following studies provided an overview of the causes of claims in various countries: Sambasivan and Soon, 2007; Muhwezi et al., 2014; Odeh and Battaineh, 2002; Shebob, Dawood, and Xu, 2011; Shrestha and Tafazzoli, 2018; and Sweis et al., 2008.

Table 2-4 shows the study authors, year of publication, research methods, data collection methods and statistical tests used.

No	Authors, year	Topics covered	Research method	Data collection	Statistical analyses & tests
1	Sambasivan and Soon (2007)	Causes and effects of delays in Malaysia construction industry	Twenty-eight causes categorised into eight groups; six ranked effects of delays	Survey questionnaire	Relative importance index
2	Muhwezi et al. (2014)	Factors causing delays in Ugandan construction projects	Eighty-one factors ranked and grouped into four categories	Structured interview, survey questionnaire	Relative importance index
3	Odeh and Battaineh. (2002)	Construction delay causes, traditional contracts	Twenty-eight causes classified in eight groups were ranked	Field survey	Relative importance index, Spearman's rank

					correlation
4	Shebob, Dawood and Xu (2011)	Analysis of construction delay factors: case study of Libyan construction projects	Seventy-five delay factors classified in eight groups were ranked. Twenty-four critical delay factors used to analyse case study.	Survey questionnaire, case study	Frequency, severity and importance indices, paired samples T-Test, risk simulator model
5	Shrestha and Tafazzoli (2018)	Investigating causes of delay in US construction projects.	Thirty causes ranked by respondents	Field survey	Relative importance index
6	Sweis et al. (2008)	Delays in construction projects: The case of Jordan	Forty causes summarised in three categories ranked using questionnaire based on open conversion system.	Survey questionnaire	Frequency index, one-way ANOVA

Table 2-4 Summary of studies regarding delay causes in other countries

Sambasivan and Soon's (2007) findings in Malaysia were found to be the most relevant to the research for the KSA.

2.5.1 Sambasivan and Soon (2007):

Sambasivan and Soon (2007) investigated construction delays and probed the intensity of their effects. They surveyed 150 respondents; from a list of their 28 identified causes of and six different effects of delays, they listed the most important as:

Causes:

1. Poor contractor planning systems
2. Poor site management by principal contractor
3. Inadequate contractor experience for type of project
4. Inadequate client finances and payment delays
5. Poor selection of underperforming subcontractors
6. Material shortages
7. Labour staffing difficulties
8. Equipment unavailability and failure
9. Poor communication between parties
10. Errors made on site during the site production stage

Effects:

1. Time overruns
2. Cost overruns

3. Contractual disputes
4. Arbitration and settlement of disputes
5. Litigation and dispute processes
6. Project abandonment

A sequence of events leading to delays might begin with request for additional time and resources, followed by a dispute, a resolution process (i.e. negotiation, arbitration, litigation) and a settlement. The assumption is that this process is linear, that all parties possess complete information, and the supply chain is unified. However, the reality is that construction projects often follow non-linear, iterative processes, often with incomplete data and information asymmetry between parties. Further, construction supply chains tend to be hierarchical with several layers of interconnected enterprises. The causes were not linked to effects, but rather categorised separately in the questionnaire.

2.5.2 Summary of construction delay causes in the KSA:

Table 2-5 shows the rankings of construction delay factors overseas. An analysis of these factors helped to determine if the KSA has unique characteristics in this regard. As an investigation of the contextual elements of claim settlement procedures is the primary aim of the current study, identification of any KSA-specific differences could assist in creating a best practice code framework for the KSA.

Causes of delays	Selected research papers (numbers refer to Table 2-4)					
	1	2	3	4	5	6
Contract document errors					✓	
Delayed contractor payments/budget and financial difficulties	✓		✓			✓
Design changes/design errors		✓	✓		✓	
Labour shortages and inadequate skills (Poor quality and labour inefficiencies)	✓		✓	✓		✓
Delayed client decisions			✓	✓	✓	
Change orders			✓		✓	✓
Changes in project scope		✓		✓		

Equipment availability	✓					
Ineffective contractor planning and scheduling	✓		✓			✓
Poor risk management			✓			
Material price fluctuations/inflationary pressure	✓					
Contractor lack of expertise	✓	✓	✓			
Poor communication and coordination between parties	✓				✓	
Inadequacy of subcontractors/subcontractor work delays	✓		✓			
Permit delays					✓	

Table 2-5 Top ten causes of delays ranked by research conducted in other countries

2.5.3 Causes of delays in other countries:

Table 2-6 summarises the frequency of the top-ranked causes of delays identified in the selected studies. Labour shortages and inadequate skills were the highest-ranked factor in most of these studies and is also a common reason for substandard quality and performance that can result in additional work (Shebob, Dawood and Xu, 2011; Sweis et al., 2008).

No	Top ten causes of delay in other countries	Frequency
1	Labour shortages and inadequate labour skill (i.e. substandard quality and labour inefficiency)	4
2	Delayed contractor payments/budget and financial difficulties	3
3	Design changes/design errors	3
4	Delayed client decisions	3
5	Change orders	3
6	Ineffective contractor planning and scheduling	3
7	Contractor lack of expertise	3
8	Changes in project scope	2
9	Inadequacy of sub-contractors/delays in sub-contractor work	2
10	Poor communication and coordination between parties	2

Table 2-6 Top ten causes of delay in other countries (selected papers)

Financial difficulties ranked as the second major factor, including delayed contractor payments.

Design changes and errors was a highly ranked issue. The decision-making capabilities of clients are an impediment to progress, which highlights the lack of centralised data and decision-making applications that appear in this research. In many cases, clients are unaware of the technicalities of project progress and are thus not fully capable of making timely decisions.

2.5.4 Comparison of delay causes across the KSA and other countries:

Venkatesh and Ventesan (2018) reviewed fifty-three articles on construction project delays. They summarized the most common causes of delays along with some of the fundamental differences between developed and developing countries.

Table 2-7 Table 2-7 Comparison of factors causing delays in developing and developed countries

, column 7a (developing countries), and 7b (developed countries) lists the main causes of delays in developing countries, which show similarities between external factors and client and contractor-related issues. The authors suggest that technological progress in the construction industry with respect to project management and the planning, controlling and implementation of broad-level standardised procedures has helped to dramatically mitigate factors related to clients and contractors.

The top ten factors in both categories were compared. Inefficiency in project management control and planning, was linked to lack of contractor experience developing countries. In developed countries, both factors did not appear in the top ten. Developing countries often exhibit financial concerns, including project budgets, as causes of major issues, whereas delays in client payments, and financial difficulties of contractors were ranked lowest in developed countries. This supports the research results of Ogunlana et al. (1996).

Subcontractor issues are more prevalent in developed countries due to the practice of outsourcing. Common causes in both categories included delays in approvals, design changes and errors, change orders and definitions of project scope.

Cause of delay	7(a)	7(b)
	Developing Countries	Developed countries
Delayed contractor payments/budget and financial difficulties	✓	✓

Design changes/design errors	✓	✓
Delayed client decisions	✓	✓
Change orders	✓	✓
Changes in project scope	✓	✓
Ineffective contractor planning and scheduling	✓	
Contractor lack of expertise	✓	
Inadequacy of sub-contractors/delays in sub-contractor work	✓	✓
Permit delays		✓
Material delays	✓	
Weather/ground conditions/ <i>force majeure</i>		✓
Economy, law and order, inflation, political instability	✓	
Poor site conditions/changes in site conditions		✓

Table 2-7 Comparison of factors causing delays in developing and developed countries

This supports the empirical data. The authors did not reflect upon what could have been implemented or changed in the KSA construction industry over time or take a systematic approach to investigating the dynamic interrelationships present between subsystems such as design, procurement, contract awards and documentation, planning or implementation and control.

Lessons can be learned for KSA construction projects. Table 2-8 Table 2-7 Comparison of factors causing delays in developing and developed countries

Shows the top ten factors across these three categories. This comparison draws upon basic assumptions in the literature about KSA claim settlements. The causes in the KSA are varied, but financial obstacles, contractor performance, lowest-bid practices, and labour shortages are the four core factors that link all other causes together. This finding helped to illuminate an understanding of the prevalent KSA practices to be included in the designing of the research framework.

No	Developing countries	Developed countries	The KSA
1	Client payment delays	Weather/ground conditions	Client payment delays/budget and financial difficulties
2	Drawing delays/design changes and errors	Drawing delays/design changes and errors	Labour shortages and inadequate skills (i.e. substandard quality and labour inefficiencies)
3	Contractor finances	Subcontractor and supplier-related causes	Contractor planning and scheduling deficiencies

4	Contractor planning and scheduling deficiencies	Change orders/changes in scope of work	Lowest-bid system (i.e. low performance)
5	Delays in material delivery	Delayed client decisions	Drawing preparation and approval
6	Change orders/changes in scope of work	Approval/permit delays by authorities	Lack of qualified and experienced personnel
7	Poor site supervision and management	Changes in site conditions/poor site conditions	Poor communication and coordination between parties
8	Economy, law and order, inflation, political instability	Contractor finances	Material type and specification changes during construction/material delivery delays
9	Delayed client decisions	Client payment delays	Contractor lack of expertise
10	Subcontractor and supplier-related causes	<i>Force majeure</i> /Acts of God	Difficulty in obtaining work permits from authorities

Table 2-8 Comparisons of ranked causes across developing countries, developed countries and the KSA

2.6 Contractual claims and litigation:

The dissatisfaction in the construction industry of stakeholders regarding the legal methods employed in conflict resolution underscores the need for improved procedures (Mitkus and Mitkus, 2014). Litigation arises from conflicts in which parties disagree over interests ranging from quality issues to behaviour. Jaffer et al. (2011) categorised the most common conflict factors into three groups:

1. Behavioural factors
2. Contractual problems
3. Technical issues

Table 2-9 lists the results of Almutairi. et al.'s (2015) exploration of the litigious behaviour found in the KSA from micro- to macro-level issues:

Litigious behaviour found in the KSA		
Micro-(direct) level causes	Macro-(indirect) level causes	Indirect causes of legal disputes
1. Client payment delays	1. Poor communication between parties	1. Design errors
2. Change orders	2. Inadequate contractor experience	2. Substandard subcontractor qualifications
3. Unrealistic scheduling and project duration		3. Inspection delays
4. Labour inefficiencies		

5. Substandard construction	3. Project scheduling and planning errors by contractor 4. Inaccurate estimation practices 5. Budget issues during construction phase	4. Violations of contract conditions
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Table 2-9 Litigious behaviour relevant in the KSA

This research identified a primary shortcoming is a lack of transparency in the construction delivery process. A comparison across three different countries (the US, the UK and Korea) helped to explain some of the challenges regarding such problems within the context of demographics and industry standards (see Table 2-10).

Main causes of litigious behaviour and claims in three countries		
USA (Genberg et al., 2014; Killian, 2003)	UK (Klinger, 2009)	Korea (Acharya and Lee, 2006)
1. Delays 2. Project disruptions 3. Scheduling disputes 4. Contractor process issues 5. Terminations 6. Claims about project scope 7. Compliance disputes due to state, federal and local laws	1. Drawing and submittal disputes 2. Change orders 3. Differing site conditions 4. Plan and specification issues	1. Differing site conditions 2. Obstruction by residents 3. Design errors and omissions 4. Change order evaluations 5. Specification and quantity of work errors

Table 2-10 Main causes of litigious behaviour and claims for three countries (USA, UK and Korea)

The most prevalent issues with respect to claim settlements in the KSA are change orders and lack of clarity in contract conditions. In addition, two major differences found in the causes of litigation in the KSA when compared with other countries include the changing responsibilities of key

personnel, and client imposition of contractor penalties without detailed investigation of the causes of delays.

The research categorised the factors driving claim settlement issues into three areas:

1. Communication-related factors
2. Expectation-related factors
3. Documentation-related factors

The most extensive issue was due to the fragmented and dynamic nature of the construction industry, which no doubt relates to communication. Poor communication can lead to serious claim situations with respect to compliance, project scope and termination (Aiyewalehinmi, 2013), and these issues can persist even if parties agree to terminate a contract.

The focus on addressing the causes of litigious behaviour in the construction industry has shifted to project delivery methods and practices (Almutairi, et al., 2015), which are also intertwined with transparency, accountability, and good governance ideologies. In the same context, approaches such as design-build (DB), construction manager at risk (CM@R), integrated project delivery (IPD), alliance contracting, public-private partnerships (PPP), and best value methods (BVM) not only facilitate information dissemination but also focus on documentation requirements.

Automation and integrative approaches can also help organisations manage uncertainty and coordination issues (Rosas, 2013; Senescu et al., 2014; Cheng et al., 2013). As architects, planners, engineers, contractors, and clients are all project stakeholders, their coordination is integral to design and project implementation (Adejimi, 2005). The professional disciplines (e.g. architect, structural engineer, project manager) and trade disciplines (e.g. contractor and sub-contractor, carpenter, bricklayer, plumber) are interlinked, which tends to introduce a self-interest bias into the process (Simpeh, 2012). This should be further investigated to better understand the dynamics of interrelationships, stakeholder interests and the cognitive issues prevalent in these systems.

2.7 Delay claim analysis approaches:

There is consensus among stakeholders that construction claims are the most destructive and unpleasant of all project challenges (Ho and Liu 2004). Semple et al. (1994) defined *claim* as “a request for compensation for damages incurred by any party to a contract.” PMI (2013) defined

claim as a “request, demand, or assertion of rights by a seller against a buyer, or vice versa, for consideration, compensation, or payment under the terms of legally binding contract, such as for a disputed change” (Project Management Institute, 2013).

The inherent uncertainty and high level of risk associated with construction projects makes assigning responsibility for claims even more complicated. The complexity of the causal relationship between delays and their effects requires analysis. Whilst some delay analysis approaches have been discussed, the implementation of such approaches for real-time for projects has been limited. There is a knowledge gap in how delay analysis is situated between the initiation of delay claims and claim settlement procedures. Contractors must explain the causes of delays and present sufficient information to support their claims, while clients need to comprehensively track and manage claims. (Abdul-Malak et al., 2002; Singh and Sakamoto, 2001; Scott, 1997). Identifying and analysing the causes of delays is also an integral part of their resolution (Janney et al., 1996). To reach a settlement without litigation, the impact, timing and contributing effects of the causes for a given delay should be determined (Vidogah and Ndekugri, 1997).

KSA construction projects are often described as complex, largely due to their uniqueness, ever increasing compliance standards, the use of advanced technology, changes during the site construction phase, and a workforce that is typically comprised of temporary organisations (Abdul-Malak, El-Saadi and Abou-Zeid, 2002; Koskela, 1992). In such complex environments, when conflicts arise a determination of their causes and the associations between events and their effects has become a major step in claim settlement. The delay analysis should be performed to identify the causes, effects, magnitude of effects and responsibility of delays after claims are made, as understanding causation is the first step in determining the level of time and cost compensation among the parties involved. Among the studies surveyed, only a few were selected for their approaches to addressing the complex dynamics of non-linearity inherent in systems for claim analysis techniques. Little research has undertaken a complete analysis of the methods that could be used in this area.

2.7.1 *Kartam (1999):*

Delay claim analysis is a process that systematically identifies each party's responsibility for a given delay to set the basis for negotiation (Kartam, 1999). A generalized 14-step method to delay

claim analysis was applied. Whilst it is helpful to understand the steps involved in documenting claims, the study lacked empirical evidence of claim settlement processes.

Kartam focused on explaining delay analysis process using a simple scenario in which the required documents were properly kept and maintained. This seems somewhat unrealistic considering the complexity of interdependent or concurrent delays. The study also did not address the complex interdependencies among claim parties, which form the basis of conflict for many claim settlement procedures.

Contract clauses to address delay claims that should be considered at the time of drafting have not been significantly explored in studies.

2.7.2 Braimah (2013):

Braimah (2013) investigated the delay and claim analysis techniques. He found that the many sources of project risk create uncertainty and identified the causal relationships that make apportioning responsibility for delays a difficult task. Poor programming and record keeping practices were identified as primary obstacles to the adoption of sophisticated claim analysis approaches.

The lack of industry agreement or standards on claim analysis approaches is a major industry issue (AAACEI, 2007). Varying claim analysis approaches produce different results with varying levels of accuracy for any given claim situation (Stumpf, 2000). A single event can influence the timing and progress of several related project operations and involve multiple stakeholders conducting several simultaneous or concurrent operations, all of which increase the complexity of analysis. In addition, self-interest, bias, and conflict of interest can also affect the selection of analysis approaches.

‘Best practice’ documents have been formulated to assist practitioners in making corrective steps for contractual clauses and record keeping. The UK Society of Construction Law (SCL, 2002) recommends forensic schedule analysis techniques, and the US Association of Advancement of Cost Engineering International (AAACEI, 2007) prescribes clear contract conditions that address float ownership, concurrent delays and determination of compensation for prolongation, along with adopting common methods for analysing claims. Many of these recommendations have not been adopted (Pickavance, 2007). The Chartered Institute of Building (CIOB) expressed

disappointment at the disregard of recommendations by contract drafting bodies and the adoption of protocols (CIOB, 2011). Moreover, contracts rarely specify approaches to analysing and the settlement of claims (Pickavance, 2010; SCL, 2002), with parties often employing approaches that suit their positions or favour their interests.

2.7.3 Boyle (2007):

Construction projects fall into different categories. The level of complexity associated with vertical (i.e. conventional) construction projects, in which a range of activities occur simultaneously and concurrent issues arise, differs from horizontal (i.e. linear) construction projects, such as highways, where fewer simultaneous activities occur. Boyle (2007) discussed the differences in the analysis approaches required for linear and vertical projects and how studies typically overlook the synthesis of circumstances involved in delay events with respect to claims. Boyle approached this complexity within a conventional system and felt the role bias can play in guiding analysis and ignoring contextual interdependence can lead to delay events.

2.7.4 Markis (2004):

Markis' (2004) investigated the difficulty of substantiating the causes of claims with documentation and how the industry tends to ignore the standards required. As a result, often legitimate requests for equitable adjustments often go unpaid due to the failure to link owner action or inaction to delay events. The origin of change orders is important, compensation requests must be proved for loss of productivity claims or contract time extensions.

When claims are under review, it is critical to demonstrate if client actions (or lack thereof) resulted in added costs or time with respect to the given contract terms. Markis (2004) discussed claim cases with respect to evidence that courts find persuasive. The gap in the literature regarding contractual details at the time of initiation, recording, documenting and standardisation of analysis techniques should be further explored to ascertain claim settlement procedures that can reduce conflict. The need also exists to understand the lack of industry standards on contract clauses regarding analysis and documentation (Markis, 2004).

2.7.5 Integrated approaches:

Researchers have suggested an integrated approach to claim analysis (e.g. Alkass and Harris, 1991; Al-Saggaf, 1998; Baki, 1999; and Alkass et al. 1996). However, their findings have largely not been implemented.

Al-Saggaf (1998) presented five points for an integrated approach to claim management:

1. Gathering all relevant information.
2. The importance of the data analysis phase.
3. Identifying the root causes of delays.
4. Classifying delays as excusable and/or compensable.
5. Identifying the responsible parties and assigning responsibility.

Baki (1999) suggested an integrated approach of three steps—claim prevention, claim preparation, and claim defence—and identified efficient documentation and organizational skills as the backbone of achieving such an approach. This finding provided a baseline for the present study.

2.8 Claim management:

Mitropoulos and Howell (2001) stated that while claims are a burden to the construction industry, the process by which problems lead to claims remains unclear. Claims can bring conflict that result in either settlements or disputes, which reinforces the need for effective ways to handle conflicts to avoid disputes (Enshassi et al., 2009).

Any claim management process requires effective documentation practices to minimize confrontation (Enshassi et al., 2009; Hassanein and El Nemr, 2007). These processes also require sufficient supporting documentation (Vidogah and Ndekugri, 1998), including drawings, specifications, written instructions, cost breakdowns and measurement records (Bakhary et al., 2015). Contractor site representatives often overlook this task and place less importance on document management (Hassanein and El Nemr, 2007). This creates information asymmetries, which are an important aspect of claim initiation. It is important to focus on matters relevant to claims and treat them as management issues. However, while any event that can trigger a claim requires action by contractors, the responsibility for handling claims in such situations has not yet been clearly assigned (Abdul-Malak et al., 2002).

Lack of attention and poor documentation are basic claim settlement issues that affect supporting construction documentation (Söderlund, 2018), and thus this is an area of focus for the research.

2.8.1 *Kululanga et al. (2001):*

Kululanga et al. (2001) defined a broad framework for claim management that encompasses the six typical phases of claim procedures: identification, notification, examination, documentation, presentation and negotiation. They identified several issues that reflect poor industry management practices in properly recording delay events and their subsequent effects on settlement processes. They found that claim management issues include lack of staff awareness and knowledge in proactively detecting causes for claims, inaccessibility or unavailability of relevant documents, ineffective documentation systems, inaccuracy of recorded information and failure to keep proper records (Bakhary et al., 2015; Jergeas and Hartman, 1995; Hai, 2019).

When unexpected events occur that could potentially result in claims, the best first step is to notify the other parties involved. The process of claim filing and notification is critical to the settlement process (Kartam, 1999). Claim procedures require document preparation and site records (Vidogah and Ndekugri, 1997; Scott, 1995) to substantiate the claim (Scott and Assadi, 1999). This makes the process time consuming and, more critically, requires inexperienced and unskilled site staff to collect the documents (Vidogah and Ndekugri 1997; Scott, 1995).

Bramble, D’Onofrio and Stetson (1990) listed the four factors that define claimant entitlement in settlement processes as foreseeability, control, causation, and legal responsibility. Claims should be properly presented and clearly documented and should have legal entitlement, contemporaneous records to establish cause and effect, magnitude and responsibility and supporting documents to back up cost or labour changes.

2.9 Dispute resolution methods:

The industry has increasingly adopted alternative dispute resolution (ADR) approaches due to the high time and resource costs of resolving conflicts in court (Haugen and Singh, 2015). Studies have highlighted ADR methods in construction (e.g. Martin and Thompson, 2011; Yates, 2011; Kamprath, 2014; Cheung et al., 2006) and methods such as collaboration, dispute review boards (DRBs), mediation, negotiation, arbitration, and litigation. Arbitration and litigation are

adversarial processes resulting in a win-lose situation and affecting the relationship between the parties involved (Yates, 2011).

El-Ashwal et al. (2020) investigated construction industry attitudes to ADR methods in the UAE and found that of the two most common ways to mitigate disputes—avoidance and resolution—avoidance is the more favoured option.

The two ways to approach disputes as either avoidance or resolution (see El-Sayegh et al, 2020; Awwad, Barakat and Menassa, 2016; Martin and Thompson, 2011; Haugen and Singh, 2015; Tanielian, 2013; Musonda and Muya, 2011; Wong and Maric, 2016). Dispute avoidance methods include negotiation, risk allocation, early non-binding neutral evaluation and partnering. Dispute resolution methods applied early in the process include negotiation, conciliation, and use of executive tribunals. Those applied late in the resolution process include further negotiation, arbitration, mediation, adjudication, dispute review boards and litigation.

This research highlights the importance of applying ADR and other avoidance methods along with increased awareness and understanding in claim processes.

Li and Cheung (2016) discussed dispute resolution clauses in construction contracts, particularly the inclusion of ADR as an integral part of a multi-tier dispute resolution (MTDR) process in the Hong Kong construction industry. This included a 2-tier dispute resolution system with the architect and arbitration, a 4-tier dispute resolution process with the project manager and project director, a dispute review panel and finally arbitration. The research highlighted the Hong Kong government's actions to facilitate the process of applying MTDR in the construction claim settlement process by introducing laws and penalties for non-compliance.

It was important to identify the factors absent in contract drafting as well as to investigate the industry-level measures that can be incorporated to adopt multitier dispute resolution process in claim settlements. Similarly, Kamprath (2014) suggested that acknowledging dispute resolution boards (DRBs) and stipulating their use in contracts could help proactively resolve disputes. And while Kamprath (2014) intended this general conclusion as an argument for all construction industries irrespective of demographic context, it suggests a that alternatives could also be implemented in the KSA.

2.10 Claim settlement:

Sources of claims typically relate to contract documentation and the availability of information provided (or not provided) in the pre-contract phase (Hai, 2019). The primary purpose of a contract is to allocate rights, duties, responsibilities, and risks between parties (Peckiene et al., 2013). Risks cannot be eliminated from construction projects, but rather are either transferred to other parties or shared based on contractual conditions. Claim settlements require expertise, time and money in settlement and transaction costs, which further complicates the process (Hadikusumo and Tobgay, 2015; Lu et al., 2015). And while Mira (2015) found that while changes and change orders often initiate claims, the most important element is disagreement between parties. Andi (2006) found risk to be a core cause or conflict between contract parties, and Hai (2019) suggested that a general lack of knowledge and awareness exists in the industry regarding contractual clauses, claims as well as the claim procedure.

Opportunism can also lead to unnecessary conflicts, as contractors may attempt to recoup losses resulting from bid underestimation through post-contract claims (Cheung and Pang, 2013). Issues in the tendering process are often overlooked to achieve lower competitive bids in the hope that profitable change orders can be made after a contract is signed (Kadefors, 2004). Parties should address this sort of opportunistic behaviour through better contract drafting processes (Abdallah et al., 2013).

2.11 Mitigation of causes of delay:

Few researchers have examined the causes of construction delays with the aim of investigating ways to mitigate the effects of these causes. Some have investigated cause-specific issues, Ramachandra and Rotimi (2015) and Yang and Wei (2010), but such studies are rare, particularly for the KSA context. As a result, most of the research into causes of delays seem inconclusive and suggest few mitigation approaches. Venkatesh and Ventesan (2018) listed recommendations contained in the literature, (see Figure 2-1) their suggestions lacked detail (Olawale and Sun, 2010).

Recommendations / strategies	Study
Owners to pay progress payment on time, appropriate funding levels to be determined at the planning stage of project	Assaf and Al-Hejji (2006); Enshassi et al. (2009); Aziz and Abdel-Hakam (2016); Frimpong et al. (2003); Koushki et al. (2005); Gardezi et al. (2014); Mansfield et al. (1994); Sambasivan and Soon (2007)
Owner to minimize change orders during construction, comprehensive strategies to be formulated for minimizing variations, effective scope definition	Alinaitwe et al. (2013); Assaf and Al-Hejji (2006); Chan and Kumaraswamy (1997); Kaliba et al. (2009)
Owner to check for the availability of resources and capabilities of contractor before awarding the contract to the lowest bidder, chose a contractor with good reputation and sufficient experience	Assaf and Al-Hejji (2006); Koushki et al. (2005); Aziz and Abdel-Hakam (2016); Enshassi et al. (2009); Odeh and Battaineh (2002); Sambasivan and Soon (2007)
Contractor to manage his financial resources and plan cashflow, contractors to have enough cash before beginning project	Assaf and Al-Hejji (2006); Enshassi et al. (2009); Sambasivan and Soon (2007)
Contractor to have proper planning & schedule, to match with resources, monitoring and control	Assaf and Al-Hejji (2006); Gardezi et al. (2014); Koushki et al. (2005); Mansfield et al. (1994)
Contractors to be more aware about construction materials and logistics, purchase materials at beginning of work, effective and efficient material procurement systems	Enshassi et al. (2009); Frimpong et al. (2003); Mansfield et al. (1994)
Continuous work training programmes for personnel in the industry, updation of knowledge and skills	Frimpong et al. (2003); Mezher and Tawil (1998); Odeh and Battaineh (2002)
Owners to employ experienced designers / consultants	Aziz and Abdel-Hakam (2016); Koushki et al. (2005)

Figure 2-1 Claim occurrence recommendations and strategies presented the literature

Two types of studies are discussed below that further highlight underdeveloped aspects of the literature on construction delay mitigation.

Olawale and Sun (2010) investigated the highest-ranked causes of construction delays not addressed in planning and control systems. They ranked twenty factors by importance with respect to obstacles to practitioners in controlling cost and time factors. The factors were grouped into two categories: those that prevent effective time management and those that hinder cost controls. Based on a relative importance index, the top five factors were selected as the area of focus, and 90 mitigating measures were listed. They intended to establish measures for limiting the effects of delays and to understand the factors surrounding these effects. They categorised these measures into four groups and designated some measures as fluid, as they fell under more than one category, depending on how and when they are applied:

- *Preventive measures*: Precautionary measures initiated during the project planning phase to forestall inhibiting factors.

- *Predictive measures*: Measures to control issues identified in the planning phase or to prevent these issues from emerging in future projects.
- *Corrective measures*: Reactive measures to rectify situations aimed at mitigating adverse effects on project control. These were further classified as:
 - *Corrective preventive measures*, which prevent future occurrences.
 - *Corrective-predictive measures*, or restorative and curative actions that predict future challenges based on current information.
- *Organisational measures*: Broad measures shaped by company values, philosophies, management styles, work ethics, and other factors reflected in company projects. These practices have a wider range of practical implications that surpass cost and time factors but that also eventually affect control processes.

Owusu-Manu, Asiedu and Adaku (2017) investigated delays in the Ghanaian construction industry and ways to mitigate cost and time overruns. They identified 114 mitigating measures and short- to medium-term strategies for mitigating delays. Their measures were categorised into preventive, predictive and corrective approaches. Table 2-11 presents the details of these two studies. Table 2-12 Table 2-12 Main inhibiting factors in the UK and Ghana and respective mitigating measures

summarises the findings:

Authors/year	Topics	Research method	Data collection method	Statistical analyses and tests
1 Olawale and Sun (2010)	Project cost and time controls; inhibiting factors and mitigating measures in practice	First phase: Twenty factors quantitatively ranked using survey data Second phase: Qualitative method using 15 semi-structured interviews	Survey questionnaires, semi-structured interviews	Relative importance index, Spearman rank correlation coefficient, interview transcript analysis, theme identification
2 Owusu-Manu, Asiedu and Adaku (2017)	Mitigating measures to address construction project cost and time overruns	Nine cost and time overrun factors selected through a literature review Qualitative focus group discussions with seven practitioners	Literature review, focus group discussions	Factor and transcript analysis

Table 2-11 Studies on mitigating causes of delays

Top five UK inhibiting factors (Olawale and Sun, 2010)	Number of mitigating measures	Top nine Ghana inhibiting factors (Owusu-Manu, Asiedu and Adaku, 2017)	Number of mitigating measures
1. Design changes	18	1. Government fiscal constraints	14
2. Risk and uncertainty	15	2. Poor project planning and supervision	11
3. Inaccurate estimation of project time/duration	11	3. Change orders	15
4. Complexity of work	21	4. Inadequate contingency allowances	10
5. Subpar subcontractor performance	25	5. Poor contract administration	10
		6. Project team competence	22
		7. Lack of effective coordination among contractual parties	10
		8. Cultural and political risk	11
		9. Contractor budget challenges	11

Table 2-12 Main inhibiting factors in the UK and Ghana and respective mitigating measures

This research presents a systematic framework built on knowledge and discusses empirical legitimacy and expert validation. This is the basic methodological approach that should be followed in developing a framework for a best practice code for claim settlements in the KSA. A significant gap in the literature exists regarding solutions and measures to mitigate the effects of KSA construction delays.

2.12 Identification of gaps in the literature:

The body of KSA construction literature on delays is small, most focus either on the causes and effects of delays or on delay analysis techniques. Underexplored areas include claim management and links between systems and the complexity of managing the interrelationships between industry actors and systems.

The influence of KSA bureaucracy in the construction processes has not been fully investigated. Navigating the work permit system and managing government communication are challenges in the KSA, but the literature largely overlooks these processes and ignores the impact of power dynamics.

Much of the KSA construction claim literature considers the sector as a monolithic unit, ‘the construction industry’, and does not consider the interdependencies between the subsystems that create causal relationships. This omission often leads to a lack of understanding of the

responsibilities involved, the issues that should be improved and the factors that hinder these processes. Similarly, the intricate relationships between the ‘causes to systems’, ‘systems to effects’ and ‘effects to causes’ are not well-covered in the literature. Thus, the current research is important, as it recognises that causes are neither static objects nor independent entities. A system dynamics approach can help link causes to their nature and to their effects on dependent systems and subsystems.

The role technology plays in construction has not been well-researched in the KSA. For example, the relatively low level of construction industry expertise and slow uptake of novel information technology tools to support the industry. Technical advances have reshaped construction industry processes and have facilitated more robust processes. As these developments have influenced both delays and claim management systems, further research is needed. Advances in information synchronisation systems between project stakeholders have enabled more robust communication mediums and software, and more importantly, have become more flexible in adhering to international standards.

The knowledge gap concerns an acknowledgement that while Al-Ghafly (1995) investigated causes of delays over 25 years ago, little has changed. This suggests several questions, including:

1. Have technological advancements changed the outlook on data, particularly with respect to the causes of delays and disputes?
2. Can and will the KSA construction industry adopt technological changes?
3. How can the industry adapt new technologies to assist in mitigating claim settlement procedures and in identifying causes of delays?
4. What lessons has the industry learned from two decades of research to improve its procedures and to move forward in dispute resolution, practice standardisation and performance benchmarks?

This research addresses these questions and recognises that further work is required on the settlement procedures and standard practices in a KSA context. The lack of research on the behaviour linked to conflicts, including cognitive bias, professionalism, and power dynamics, is also addressed in this research. The gaps in the present literature highlight the need to undertake this research on claim settlement procedures in the KSA and to develop a framework for a best

practice code to mitigate the effects of construction claims.

2.13 Summary:

The chapter presented the causes of delays in KSA, causes of the contractual claims and litigations, delay and claim analysis approaches, claim management, dispute resolution methods and claim settlement process especially with respect to KSA. The financial difficulties, late payments, labour shortages, lowest bids and ineffective planning, lack of qualified personals and changes were the major issues.

A comparison was drawn to identify the main aspects of claims in KSA and other countries. Also a summary of issues were tabulated to analyse the changes that can be drawn from early literature to present day. The behavioural, contractual and technical issues were identified for litigious behaviour in KSA including delays, disruptions and late payments stand out along with changes that occur. Similarly for claim settlement Communication-related factors, Expectation-related factors and Documentation-related factors are discussed in literature. Integrated approaches in light of literature were discussed for better results. This lead to identify gap in knowledge. Finally the way to present the measures and strategies to mitigate the negative effects was discussed. This will be used to structure the conceptual framework as well as to design the research methodology.

CHAPTER 3: INTERRELATIONSHIP AND COMPLEXITY

3.1 Introduction:

The chapter will focus on interrelationships and complexities that arise within the system of claim settlement. It will identify major subparts of the system and their interrelationships. Claim management process will be presented as the representation of actors and processes involved and the issues related to them. The subsystem will also be identified to highlight actors, processes and issues that are interlinked reflecting upon the interrelationships and complexities.

The complexity and interdependence within the system is important to codify the best practices to mitigate claim settlement procedure.

3.2 Claim Management:

Claim management is a complex, interdependent process (as discussed through chapter 7 and 8). The basic underlying theories that cover such interdependencies, complexities and chaotic behaviour includes:

1. Complexity theory
2. Chaos theory
3. Decision making

It is important to intertwine the complexity and interdependence within the system to codify the best practices to mitigate claim settlement procedure.

3.3 Causal Analysis:

The causes of certain effects are important to understand the causal relationships between variables. Identifying how one variable affects the other, the causes and the effects, the magnitude of the effects and the distinction between independent and dependent variables (Perera, Sutrisna & Yiu, 2016) helps in building measures subsiding the “triggering cause” and “its effects”.

To establish a causal relationship, five criteria must be met with two being most important Co-variation or correlation of events (i.e. variables) and Time-order relationship. (Check & Schutt, 2012).

1. *Co-variation or correlation of events (i.e. variables)*: It represents the association between dependent and independent variables, it describes how changes or variations in one variable causes an effect in other variables.
2. *Time-order relationship*: It is the most important factor in establishing causal relationships. The association is must, but the time order also matters; the cause must occur before the event. Variation in an independent variable/event must occur before any variation independent variable/event. This is also known as the temporal priority of the independent variable.

There are many underlying causes in conduction projects that reflect upon later stages in implementation (see section 4.2).

3.4 Complexity Theory:

Complexity is an intriguing characteristic of construction projects (Bennett 1991, Mubarak 2010, Sullivan et al. 2010). The operational activities of the organizational, technical and environmental factors add complexities to the operation of construction project (as expressed by respondents in section 7.3.3).

Sargut and McGrath (2011) presented a simple classification between simple, complicated and complex systems. A simple system is one with low degree of interaction and dependable predictability. Complicated system has many elements with many interactions, but these interactions are functioning according to some pattern, so they are predictable. Complex system on other hand are identified by multiplicity, interdependence and diversity, so their outcomes cannot be predicted meaning same system configuration at start may give different result.

Gidado (1996) presented complexity as a pure technical character concentrating on components like inherent complexity, uncertainty factors, number of technologies, rigidity of sequence, overlap of stages and their interactions.

Being a complex system means that it is able to re-arrange its components under appropriate conditions of more complexity in a purpose full way (Merry ,1995).The behavioural features root from the interactions of constituent elements with the environment. This does not follow a linear behaviour path. Linear means that the sequential flow will be followed to reach an expected result that is not affected by the dynamic changes, which represent more real time and realistic behaviour.

Complex systems are defined through complexity theory. System is defined to have interconnected parts. These parts combine and connect to exhibit some characteristic or outcome. These outcome or characteristics are not obvious if the parts are inspected or interacted at individual level (Azaran, 2012).

The relationships between these parts generate the behaviour of system. This also devise the relationship that evolves through these interactions (Wood & Gidado, 2008). These interactions are linked with feedbacks within the system and system adapts as per the environment (Morel and Ramanujam, 1999; Ramalingam et al., 2008; Bertelsen, 2003). As per Harvett (2013) these interconnected parts, as a system, when interact and compose themselves around change, deviation, innovation and adaptation is known as complexity.

Complexity theory arises from chaos theory which deals with nonlinear relationships and the outcomes are the eventuality of the multiple reasons which also usually do not supplement each other.

Complexity theory in a nutshell state that the need is to focus on interaction between different parts of the system and how these interactions effect system as a whole, as well as how the relationships between them give system an identity which is not limited to mere individual parts but represent system as a whole (Richardson et al., 2000).

3.5 Chaos theory:

Systems are not working in isolation. They respond to the environment. The level of interaction develops the response to the changes happening around them (Chiari & Nuzzo, 1996). Deterministic chaotic behaviour has several distinctive characteristics (Warren, Franklin & Streeter, 1998)

- Chaos arises within the feedback systems
- The outcomes from behaviour remain within possible frame of known but never precisely repeat itself.

Information from environment is noise to the system generating the positive feedback (Perturbations). This produce iterations as per structure of system resulting in disorganisation (chaos) and rapid change to adjust back. The system and environment will perturb each other and will be in constant phase of change. This is an adaptive process, referred to as structural coupling

by Maturana & Varela (1987), where system will keep on adjusting to environment and environment will keep on responding to the changes.

Chaos theory explains the process of change and adjustment, which are continuous and emerging and helps in understanding structural coupling.

Complex systems, by virtue of nature or inherent feedback and adjustments can't be predicted. Moving further from chaos is complexity theory. This defines the zone between stability and predictability at one side and chaos and unpredictability at other. In this zone the system will adapt, learn and grow.

3.6 Decision making:

When projects face cost and time overruns, the reasons which resulted in such circumstances and the decisions made are important. Two main reasons for doing so is to (Howick, S. et al(2009)

1. Learn from the situation for future projects.
2. Establish the cause, impact and responsibility to justify and relate the claim compensations that one party wishes to be paid from other.

Decision making is very important in such fragmented environment as construction project. Owners seek well-informed decisions regarding any changes whereas the contractors prefer to claim estimation upon project completion (Ibbs, & Liu, 2005).

The most differing factor is the self-interest of each party preparing the claim. Generally, the party preparing the claim have very different objectives vested in it then the party agreeing on it on behalf of clients. Obviously, the contractors want to be paid or reimbursed while the client most probably wants to save some expenditure. The whole process will involve time, cost, production, schedules and contractual liabilities. The lack of timely detail and decisions also makes the process more difficult. Especially in the chaotic behaviour adaption the deterministic decision making is very important.

3.7 Construction project complexity, chaos and interrelationships:

Construction project is exemplified as a temporary endeavour, with activities that have defined start time, a construction cycle to follow and final result in shape of handover to client. (Rosenfeld et al, 1991). This all is greatly influenced by many factors, some known and many unknown with

some controllable but many uncontrollable, playing their respective role in project completion. The factors are internal as well external to the project but they are sometime detrimental to the performance.

Each construction project has its own unique set of requirements including size, type, location and budget. The interdependency of the activities is the core of complexity present in each project. Often times a disruption or delay in one causes a continuous chain of delays and disruptions effecting the final outcome.

As per Gidado (1996) complexity in construction originates from number of sources including resources that are employed, the operating environment, and the requirement of scientific knowledge and the interaction of different parts in the workflow. He presented two main categories from where complexity arises, one is related to uncertainty that is inherent from resources or environment while other stems from the interdependence among tasks in the workflow.

A construction project can be divided into sub system where each has its own set of activities. The interdependency amongst these subsystems is very important.

Project brings four distinct groups that need to be managed:

- Systems and procedures
- Organisations
- People
- Process (procurement and production)

The linkage between them is very important to understand the behaviour of the project.

The process, procedures and techniques are analysed to devise methodologies to perform specific task. The hard and soft systems interplay when performance has to be calibrated. This brings forward the complexity inherent in managing the construction project.

There are individual factors which are playing their role in construction project. Not just at individual level but the interaction and the interrelationship between these factors and the effect of these interactions on overall productivity and deviation that have occurred. (For example, design as an individual process has its own complex system involving deterministic behaviour but at the

same time effecting the construction phase that has its own set of operation complexities and interrelationships with soft and hard aspects of implementation).

Construction project is dynamical system⁴, as its requirements, procedures, processes and outcomes are not constant, but changes occur over time (Devaney, 1992). A dynamical system can change either in linear or nonlinear manner. Where linear defines changes which are simple cause and effects relationships and nonlinear are ones where cause and effects are not straight line or proportionate to one another.

Nonlinear (or systemic) thinking focus on processes dynamics and connections, the context, the interactions and the relationships between elements and the feedbacks (Pelánek (2011)

The inherent fragmented nature of construction project, communication and collaboration challenges, budget and time constraints, uncertainty surrounding external factors and management issues all make disruptions and delays quite common. One primary source of productivity losses in the construction sector concerns these delays and disruptions, affecting the profit margins of contractors and the financial plans of owners. This uncertainty also makes settlement procedures among parties less amenable and prone to conflict, thus more expensive.

Construction projects are complex by nature and consist of many interdependencies which have nonlinear relationship. For example, error in drawing. In such case delay will occur and the need will be to consult owners as well as design teams. The time that will be consumed has nonlinear relationship to the productivity. The inherent uncertainty in the construction project plays a big role in these complex interdependences. Other than this the qualitative relationships are also nonlinear (Forrester, J. 1961; Ackermann, Eden & Williams, 1997; Lyneis, J. & Ford D., 2007). Examples include quality and cost, fatigue of labours and quality, morale of workers and productivity, all having nonlinear relationships.

There are interrelationships, feedbacks and dynamism involved in the system. The interrelationships complexities, the dynamic nature of the components of the construction project and the construction industry environment make all project factors including human factors,

⁴ “A dynamical system is a system whose state is uniquely specified by a set of variables and whose behaviour is described by predefined rules” (Sayama, 2020)

environmental factors, procedures and management actions structurally coupled (Wan & Yaqiong, 2014).

In construction projects hard data like engineering properties (drawings, material and equipment) are as important as the soft data like organizational properties (management style, policies, morale, cognitive behaviour). Taking all aspects together can help specify the relationship between them (Raghavendra et al, 2017).

Therefore, construction projects being complex systems (non-linear and dynamic) may be analysed using chaos theory. Chaos theory is an enveloping phenomenon explaining different set of concepts presenting alternative descriptions to behaviour of non-linear systems, whereas "chaos" represents the randomness or chaotic behaviour of non-linear system.

The initiation of project to causation of delay to presentation of claim, all the components within the construction project interact, adjust and adapt itself well fitting into the zone of stability and predictability and chaos and unpredictability.

To understand the process and prescribe a road map, it is needed to establish interrelationship between elements of claim management.

3.7.1 Claim management process:

Reflect the processes, the actors and the issues related to them. The interrelationship between different processes and the actors manifests the complexity. Many of the issues are interdependent between processes and the actor's role.

The processes and actors identified in the first circle are

1. Client
2. Design
3. Tender
4. Procurement
5. Contractor
6. Construction
7. KSA environment
8. Claim resolution
9. Judiciary

The issues pertaining to each process and the factors associated to actors were reflected in the second circle. The issues are interlinked and dependent on various other factors (processes and actor's role).

To explain it a little further, Budget is a constrain that client put to the system. Within that constrain the design process and estimations are made. After tendering the contractor has to deal with the on-site conditions for operations keeping within that budget.

A variation or change in design, site conditions, operation activities and planning and management issues cost the project time and money.

Such issues are interlinked to other processes and actors. It can be that clients demand few changes or that site conditions require few adjustments to the design or it can be the government level regulations that halt some process or the approval/permits taking a long time.

All such issues are linked through different layers and dependent on different processes, issues and actor's role.

Design process is initiated at pre-construction phase. It is the most important part of tendering (bidding Document) that contractors use to bid and provide estimations (work breakdown structures, programmes and bull of quantities). The construction document revolves around the details provided at this stage. In a way this process is linked to Tendering, Procurement, Contractor and Construction.

The implementation of design but also depends on contractor performance. The planning and management, the cash flows, site management, sub-contractors performance and supply chain management, all has to be dealt by the contractor. At the same time implementation is also briefly affected by external environmental factors of industrial regulations and conditions (labours, skills, laws, raw material availability etc.). The role of approving bodies and bureaucracy involve within the system also affects the implementation phase. All these are interlinked and dependent issues.

3.8 Interrelationship and interdependence within claim management system:

The research reflects deep down into the dynamics of complexity and interrelationships between system and subsystems. The claim management system needs to be expressed through the sub processes and sub systems exploring the role of the actors affecting the process.

The literature review and qualitative and quantitative data analysis led to identify the subsystems and processes that create problems.

The cause-and-effect relationship present between these processes and actors creates uncertainty to the outcomes. The expansion of system into its subsystem helped in elaborating the complexities and interrelationships inherent in the claim management system.

The processes and issues relating to them that are interlinked are expressed in Table 3-1.

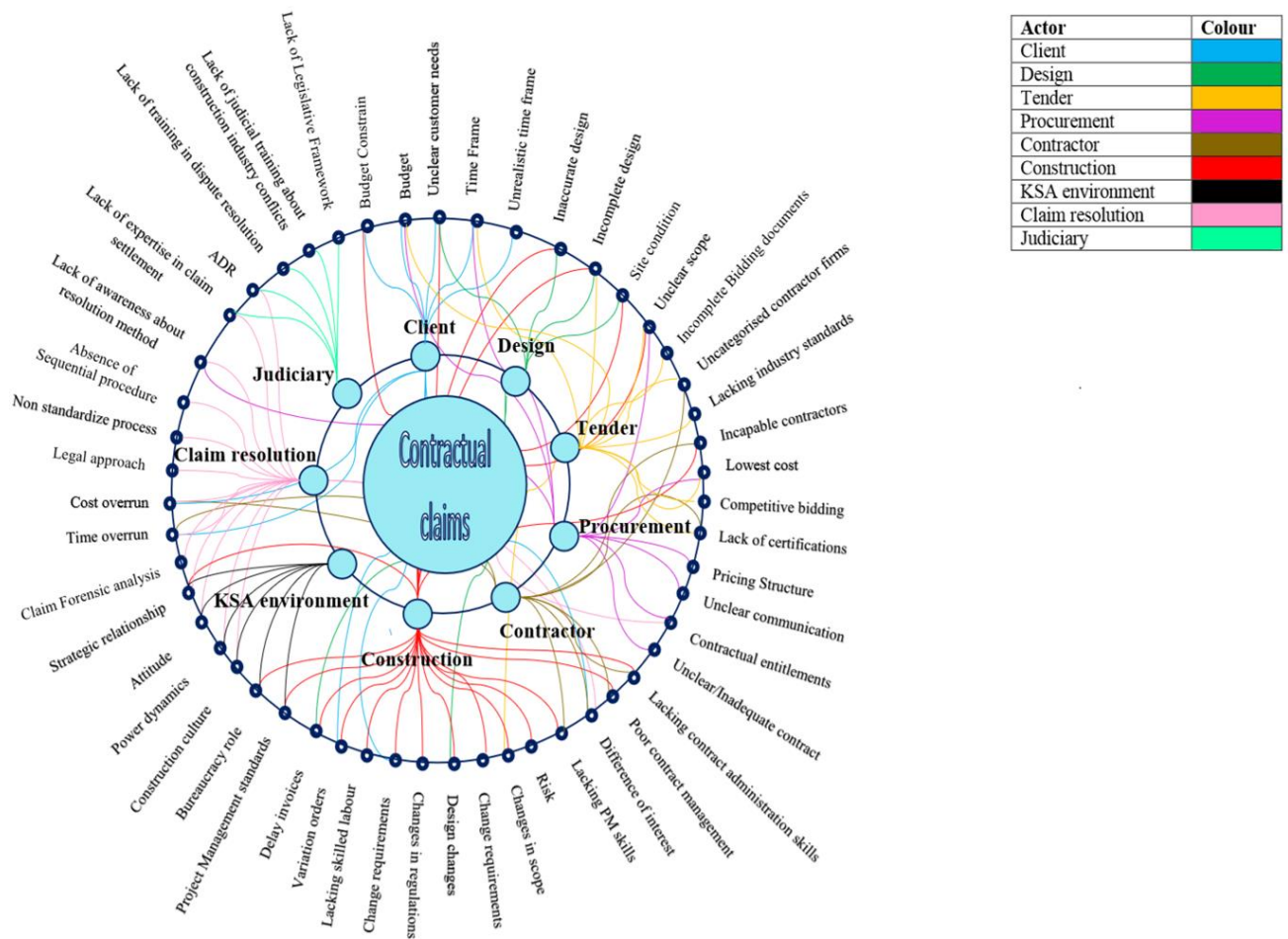


Figure 3-1 Claim management in terms of sub systems, actors and issues

Issues in the:	Related to - Categories:
Pre-construction phase	Design

	Procurement system Contract awarding Contract drafting
Contract drafting	Contract administration
Construction phase	Construction process Project management Uncontrollable events Bureaucracy and governance Claim management
External Environment	Construction industry

Table 3-1 Issues and their related categories in claim management

Claim management process in terms of processes, subsystems (including actors) and issues associated to the processes are highlighted in Table 3-2.

The Figure 3-2 shows each of these systems. The identified processes and actors of each individual system are marked in first circle. The issues relevant to each of these processes and actors are presented in second circle. The colour codes used for Figure 3-2 and Figure 3-3 to represent each system is as follows (Table 3-3, Table 3-4, Table 3-5, Table 3-6 and Table 3-7).

Subsystems	Processes and actors
Project	Design process Client Contractor Tender Contract awarding Implementation
Construction Industry	Laws and Regulation Approvals and Permits (Bureaucracy) Legal Infrastructure Technological Usage Human resources (Quality and Skills) Raw material and Equipment availability
Procurement system (Pre-construction Phase)	Pretender Tender Contract Awarding
Contract Drafting	Client Contractor Standard form of contract
Claim management	Standard form of contract

Legal infrastructure Conflicting Parties Technological Usage
--

Table 3-2 Subsystems of claim management and their related processes and actors

Construction industry	
Government level policies regarding industry	Dark Green
Construction industry Environment	Light Green
Legal system	Bright Green
Technology Advancements	Light Green

Table 3-3 Colour code for construction industry subsystem

Project	
Design Phase	Light Blue
Procurement	Light Blue
Contract Formulation	Dark Blue
Construction	Blue

Table 3-4 Colour code for project subsystem

Procurement System	
Pretender	Brown
Tendering	Yellow
Contract awarding	Yellow

Table 3-5 Colour code for procurement system subsystem

Claim Management	
Claim settlement procedure	Pink
Behaviour	Purple
Legal Support	Pink
Technological support	Purple

Table 3-6 Colour code for claim management subsystem

Contract Drafting	
Contracting parties	Red
Dispute resolution clauses	Orange
Standard Form of contract	Grey

Table 3-7 Colour code for contract drafting subsystem

All these sub systems are also interlinked. The interrelationship between the processes (or actor) of one subsystem to the actor or process of second sub system elaborate the complexity and

interdependence. Figure 3-3 reflects the complexity between these systems representing the interdependencies and cause and effect relationships.



Figure 3-2 The subsystems, its processes and related issues.

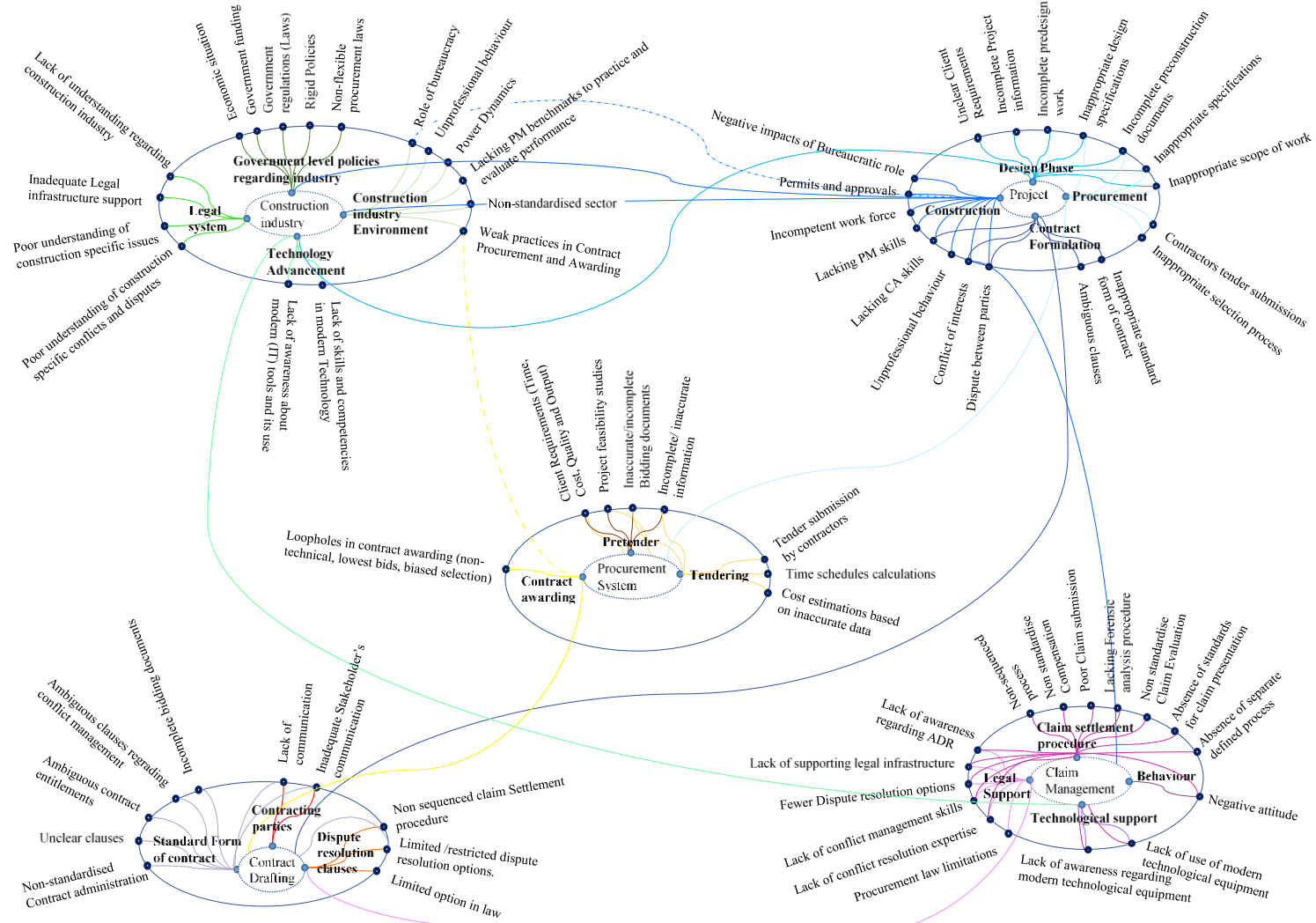


Figure 3-3 The interlinked subsystems, its processes and related issues.

3.9 Drivers, enablers, disruptors and issues:

Important element of claim management system include:

1. Project
2. Procurement system
3. Contract Drafting
4. Claim management
5. Construction industry

These elements face complex interdependent relation and interact with one another and loop through structural coupling resulting in either enabling or disrupting the system outcome.

The cause-and-effect cycle and the interrelationship between these elements generate the complexity and dynamism (Abdul-Malak, El-Saadi & Abou-Zeid, 2002). This complexity and chaotic behaviour of the components of the project are the base for understanding the drivers, issues, enablers and disruptors in the system (Bertelsen, 2003). Table 3-8 shows these elements, its role, drivers, its enablers, disruptors and its issues in a summarised form.

Construction industry: The external environment that effects policy, laws, regulations and economic parameters effecting project progress	
Drivers	Enablers
Financial Drivers	Modern Technological tools (IT)
Government Policy	Government Laws and Regulations
Economic outgrowth	Government funding
Needs (requirements)	Economic stability
Technological capabilities	
Disruptors	Issues
Negative aspects of Bureaucracy role (time consumed)	Non-performance of sector
Technological ignorance	Declined quality
Rigid and limited options in law	Financial and time overruns
Political issues	Unprofessional behaviour
Unprofessionalism	
Non-standardisation in construction sector	Failure to meet international modern technological requirements and needs
Un-Systemised and non-standardised work processes	Delays in achieving milestones due to laws and procedures
Project: The endeavour taken with resources in hand within external context of industry	
Drivers	Enablers
Financial outcomes(advantages)	Resources (Financial , time , human)
Government regulations	Procedural structures
Client Requirements	Systemised and standardised processes

Enhancement in technological capability and improvements	Modern Technological tools (IT)
Quality of life improvements and upgradations	Government laws
Construction industry (Needs, environment, laws, economic situation)	Communication and collaboration tools
Socio-Economic needs	
Disruptors	Issues
Incompetent work force	Declined quality
Unprofessionalism	Financial and time overruns
Inadequate design process	Design Issue (incomplete, inaccurate)
Changes in requirements	Delays in project progression causing disputes and claims
Rigid and limited options in law	Unprofessional behaviour , poor PM and CA practices and low quality skill resulting in disputes
Changes in scope	Lack of awareness and training regarding modern IT tools and their use.
Incomplete Pre construction work (survey, feasibility, design, time frame, schedules)	Failure to meet international modern technological requirements and needs
Inadequate communication and collaboration mechanism	Longer time taken for approvals and processes
Standard form of contract	Ambiguous Dispute resolution process
Un-Systemised and non-standardised work processes	Uncertainty (weather conditions, risks associated to uncontrollable factors)
Technological ignorance	
Negative aspects of Bureaucracy role(time consumed)	
Weather	
Procurement system: The subsystem of the awarding contract of the project. Involves preconstruction process, bidding, tendering and evaluation details	
Drivers	Enablers
Best economic selection	Efficient Tendering system
Financial benefit	Efficient Bidding
Quality benchmarks	Project Delivery system
Expertise	Government laws
Procurement policy	
Government regulation	
Disruptors	Issues
Non-standardisation in construction sector	Declined quality
Incomplete bidding document	Selection biases (Lowest bid, nontechnical selection)
Incomplete Pre construction work (survey, feasibility, design, time frame, schedules)	Failure to meet international modern technological requirements and needs
Rigid and limited options in law	Unprofessional behaviour
Standard form of contract	
Loopholes in Contract awarding (selection criteria)	
Standard form of contract	

Contract drafting: The subsystem of drafting contract clauses, involving construction drawings, specifications, procurement and contracting requirements, Addenda and contract modifications	
Drivers	Enablers
Communication between parties	Communication and collaboration tools
Settle Project details	Government laws
Clarity of responsibilities and liabilities	
Disruptors	Issues
Unclear clauses	Lack of focus on written documentation
Ambiguity about Contract entitlements	Ambiguous Dispute resolution process
Ambiguity about Dispute resolution	Unprofessional attitude towards project progress
Standard form of contract	Failure to meet international modern technological requirements and needs
Unprofessionalism	Unprofessional behaviour
Lack of awareness regarding alternative way to resolve	
Inadequate communication and collaboration mechanism	
Claim management: The subsystem dealing with methodology of resolving conflicts and claims within project resources, contract details and industry standards.	
Drivers	Enablers
Transparency	Technological support
Time Efficiency	Legal support
Cost Efficiency	Behaviour towards resolution
Trust on the system	Government laws
	Proper Claim management system
	Clear Contract
Disruptors	Issues
Power dynamics	Claim resolution delays
Procedural loopholes	Lack of legal infrastructure.
Attitudinal issues	Lack of standardised Claim management
Legal Structure issues	Unprofessional behaviour
Standard form of contract	Behavioural barriers towards alternative resolution ways
Lack of awareness regarding conflict management and ADR	Lack of usage of modern IT tools (to support proof and claim submission)
Non standardised process for claim submission and evaluation	No standards for claim presentation, submission, evaluation and compensation
Ambiguity about contract entitlements	

Table 3-8 Summary of sub systems and its related drivers, enablers, disruptors and issues

3.10 Summary

Construction projects being complex systems (non-linear and dynamic) need to be understood with to different factors and their effects that are many times interrelated. Claim management process being one such aspect that needs to be interpreted with respect to the complex interrelationships between different actors, processes and issues that are even interdependent and intertwined within the system. The claim management process was described in a system diagram with actors, processes in first layer followed by the issues relating to them in second

layer. Also the inter-relationships were drawn to give it a broader understanding. This helped in drafting major subsystem that play important role internally or externally to the environment enveloping claim management system. These included Project, Procurement system, Contract Drafting, Claim management and Construction industry.

The processes and actors related to each subsystem were identified as well as the interrelationship was drawn to understand the core problem areas and their effects on the process. This also helped in drafting each element, its role and the drivers, enablers, disruptors and issues associated to it.

CHAPTER 4: CONCEPTUAL FRAMEWORK

4.1 Introduction

The chapter will design the conceptual framework that needs to be structured from the analysis of data representing the issues, causes, needed improvements and recommendations for improvements. The causes categories and recommendation areas for improvements that were identified through the analysis chapter will help build up the framework. The framework will then be populated with measures that should be considered for mitigating negative effects.

4.2 Introduction to Conceptual Framework:

Miles and Huberman (1984, p. 33 as cited in Mitchell et al., 2011, p. 304) define a conceptual framework as being “used as a map to devise the needed modifications in the current system or problem being investigated.” This definition has been adopted in this research.

Figure 4-1 illustrates the flow chart representing the sequence of activities undertaken to design the conceptual framework, using a methodology adapted from Bhattacharya et al. (2013). The left column shows general steps and the right-hand column shows the steps taken in this research using Bhattacharya et al (2013) methodology.

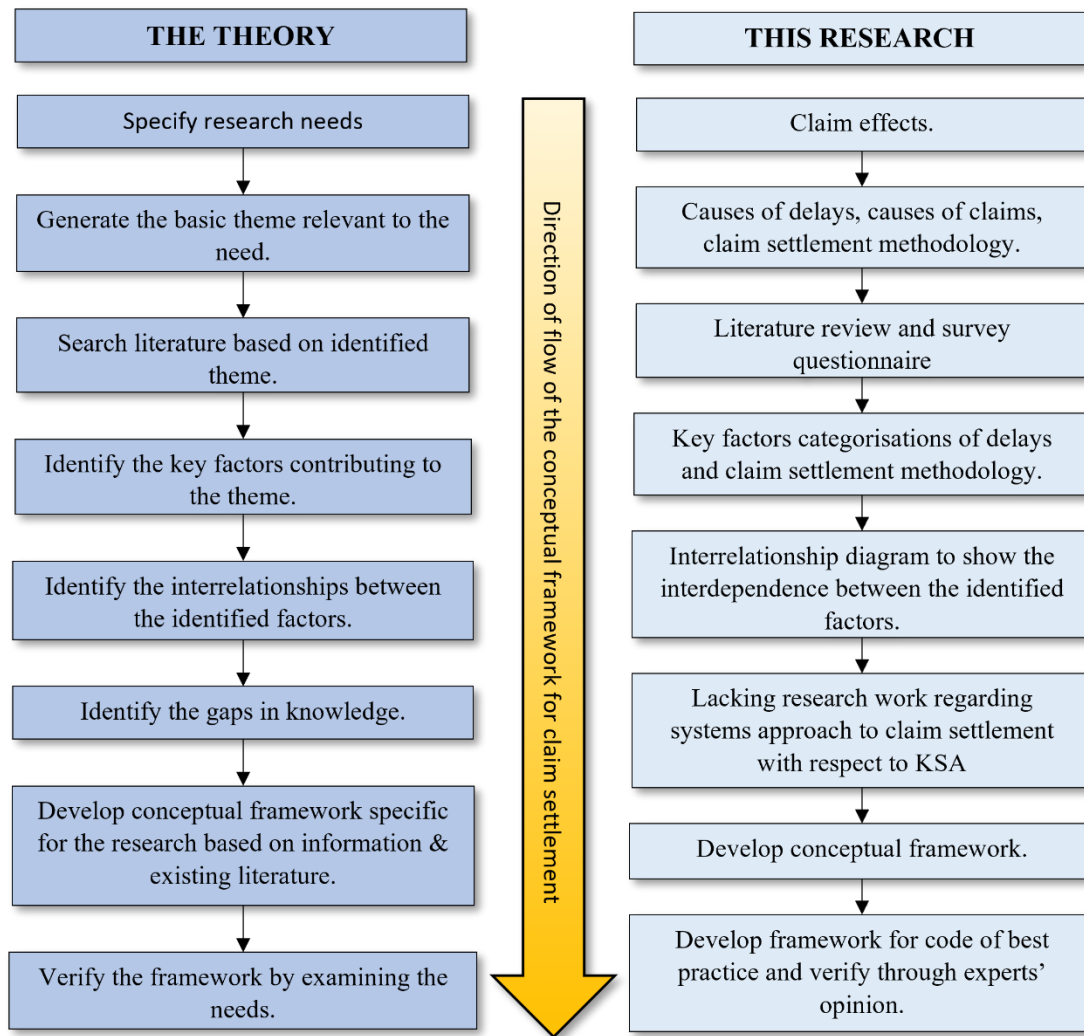


Figure 4-1 Research steps taken to design the conceptual model

This research focuses upon the claims settlement process outlined in a contract agreement; it is not about the settlement of disputes that may involve alternative dispute resolution, arbitration, or legal proceedings. Dispute resolution occurs when the basis and settlement of a contractual claim cannot be agreed upon; it may also involve disagreements about aspects of the contract. A contract stipulates the procedure to be followed in the settlement of a claim.

The first step was to identify the knowledge gap from the literature review. Themes and sub-themes were identified, and a questionnaire was designed to synchronise the information with the practitioners' experiences and thought processes.

Respondents with good background knowledge about the KSA construction industry were selected. Semi-structured interviews were conducted and the responses analysed. The qualitative data was transcribed and from these themes and sub-themes were identified. The

dominant themes were coded. The data was then analysed by utilising the themes and codes and performing frequency distribution i.e. the factors were ranked by the frequency with which the respondents mentioned each. This step was undertaken to verify the factors previously highlighted in the literature and created a basis of the practitioners' views of the realities in the existing claim settlement system in KSA.

On the basis of a qualitative analysis, a quantitative questionnaire was designed to collect relevant information regarding recommendations/measures to be considered for needed improvements.

The next step was to design a conceptual flow chart of actions and processes that are interlinked and interdependent based upon the data collected. The identified improvements specific to the process and action were used to design the conceptual framework and recommendations.

The flow chart (see Figure 4-7) explains the initiation of an action and its effect on the system. This is elaborated with defined systems, subsystems, and relevant processes obstructing the flow of activities.

The proposed framework needs to recognise the interdependence and cause-and-effect relationship between different processes and actors.

The conceptual framework is designed in two stages. Initially, the causes that lead to conflicts or disputes and delays with a probability of raising claims were identified. This was expanded to include what happens when claims arise and the issues hindering the claim settlement procedure adopted in KSA. The second stage was to design the measures around these factors and develop their causes and effects.

4.3 Cause and effect diagram:

The literature identified the themes and sub-themes relevant to delays, effects of delays, contractual claims, and claim settlement procedures' inefficiencies. The settlement process can be regarded as a system.

An interview questionnaire was developed using the identified themes and sub-themes in the literature, to seek relevant data that could present areas of inconsistency in the process. It was necessary to narrow down and keep the identified causes specific to KSA practices. The semi-structured interviews were designed to help identify the basic factors responsible for the cause of delays and inefficiencies in the claim settlement approaches.

The answers were analysed to rank the factors and design the conceptual framework needed to mitigate the negative effects of claim settlements and codify the settlement procedure. The contextual elements of the process also need to be considered. The project's operative environment is encapsulated by environmental and industrial standards, and the level of current research. The environmental and industrial standards surrounding the operative aspects have a major impact on the way things are being done. The norms of the industry are generally established through practitioner engagement.

The basic themes identified were the causes of contractual claims, causes of delay and requests for financial reimbursement, the process of consideration and negotiation, and claim settlement. The causes identified for delays are often interlinked to the causes of claims.

The cause-and-effect diagram (Figure 4-2) represents the cause of delays and the factors associated with their initiation. The identified factors were classified into:

1. Issues relating to the pre-construction phase.
2. Issues relating to the procurement phase.
3. Issues relating to the contract drafting phase.
4. Issues relating to construction phase.

This grouping was used because many claims emanate from the early stages of a project, which manifest themselves in the site production stage.

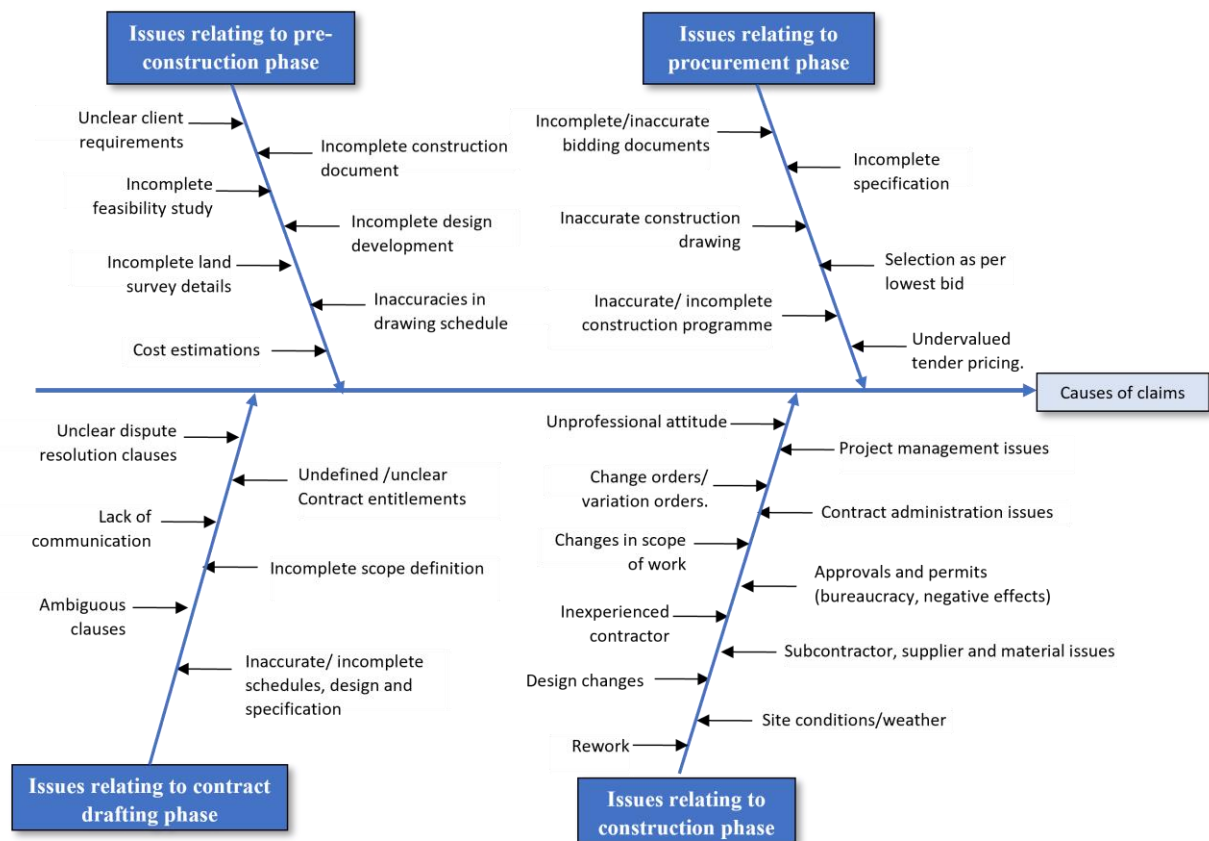


Figure 4-2 Cause and effect diagram of causes of delays/claims

The causes have effects further into the project, which are linked to other factors (factors falling in other categories) as well. Table 4-1 shows the effects.

Categories of issues	Effects of cause factors
Issues relating to the pre-construction phase.	<ul style="list-style-type: none"> • Affects project (implementation) • Causes delays in progress • Causes cost overrun • Causes change/variation orders. • Incomplete bidding documents for bidding affecting implementation
Issues relating to the procurement phase	<ul style="list-style-type: none"> • Inexperienced contractor selection affects project implementation. • Incomplete construction documents affects project implementation (construction program) • Lowest bid selection affecting the quality
Issues relating to the contract drafting phase	<ul style="list-style-type: none"> • The standard form of contract • Ambiguity about entitlements • Affecting collaboration • Incomplete construction document needing variations
Issues relating to construction phase	<ul style="list-style-type: none"> • Affects cost and time • Affecting project planning, site management and supply chain management • Affects quality of project • Causes conflicts • Affecting professionalism/behaviour issues • Affecting cash flow issues

Table 4-1 The effects of the causation factors (by category).

The effects of the factors can be tracked to factors falling in other categories. The “incomplete construction document” in Pre-construction phase issues effects the “Incomplete/inaccurate bidding documents” in Procurement phase issues.

Similarly, the “selection as per lowest bid” in Procurement phase issues effects the performance in construction phase by “inexperienced contractor”.

To understand interlinked and interdependent cause and effect relationship, explore “incomplete construction documents” in preconstruction phase. The “incomplete construction documents” (preconstruction phase) effects the “cost estimations” (preconstruction phase) resulting in “incomplete/inaccurate bidding documents” (procurement phase). This generates “undervalued tender pricing” (procurement phase) and “incomplete specification” (procurement phase).

Undervalued tender price is one of the causing factor for claims.

Incomplete specifications generate “inaccurate /incomplete construction programme” (procurement phase) that effects “inaccurate/incomplete schedules, design and specification” (contract drafting phase) and “incomplete scope definition” (contract drafting phase) as well as “rework” (construction phase) all leading to causes for claims.

The interrelationship between these factors can be traced in Figure 4-3. It amplifies how the processes are interdependent and factors at pre-construction affects the construction stage.

The second major aspect of the interview identified the inefficiencies regarding the claim settlement procedure employed in KSA. The data were analysed to identify the factors creating inefficiencies in the claim settlements procedure in the current system in KSA, highlighting the practicalities being faced.

The respondents’ views regarding claim settlement and how things could be improved, led to a number of issues which were grouped into the following categories:

1. Issues relating to the adopted procedure.
2. Issues relating to the claim presentation process.
3. Issues relating to settlement procedure.
4. Issues relating to behaviour.

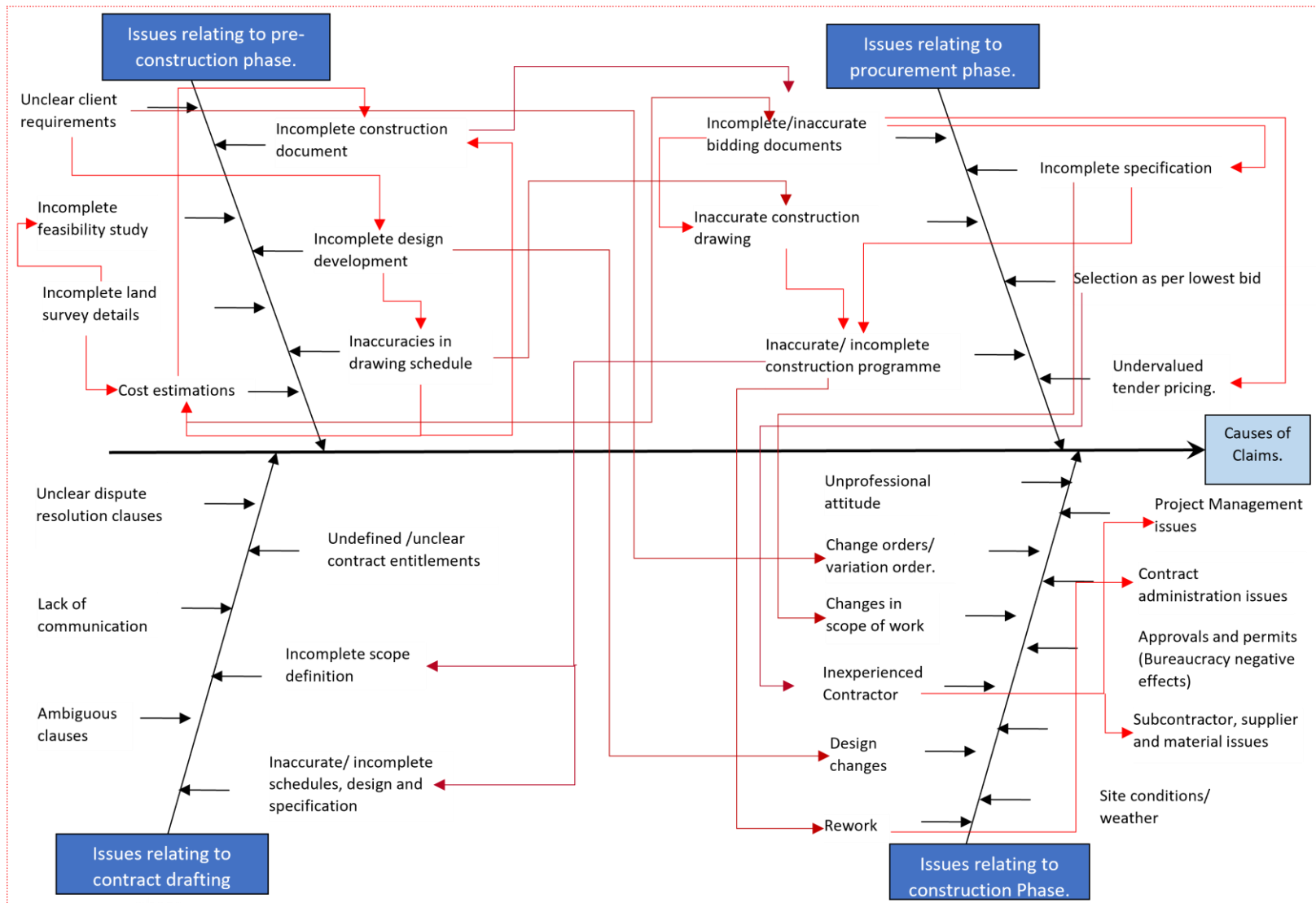


Figure 4-3 Interlinked cause and effect diagram of causes of delays/claims

The major causes related to the non-sequential nature of the process, the absence of a separate system, the lack of legal infrastructure, and a lack of understanding regarding construction sector conflicts and behavioural issues. The most important factor raised was the underlying attitudes in the industry.

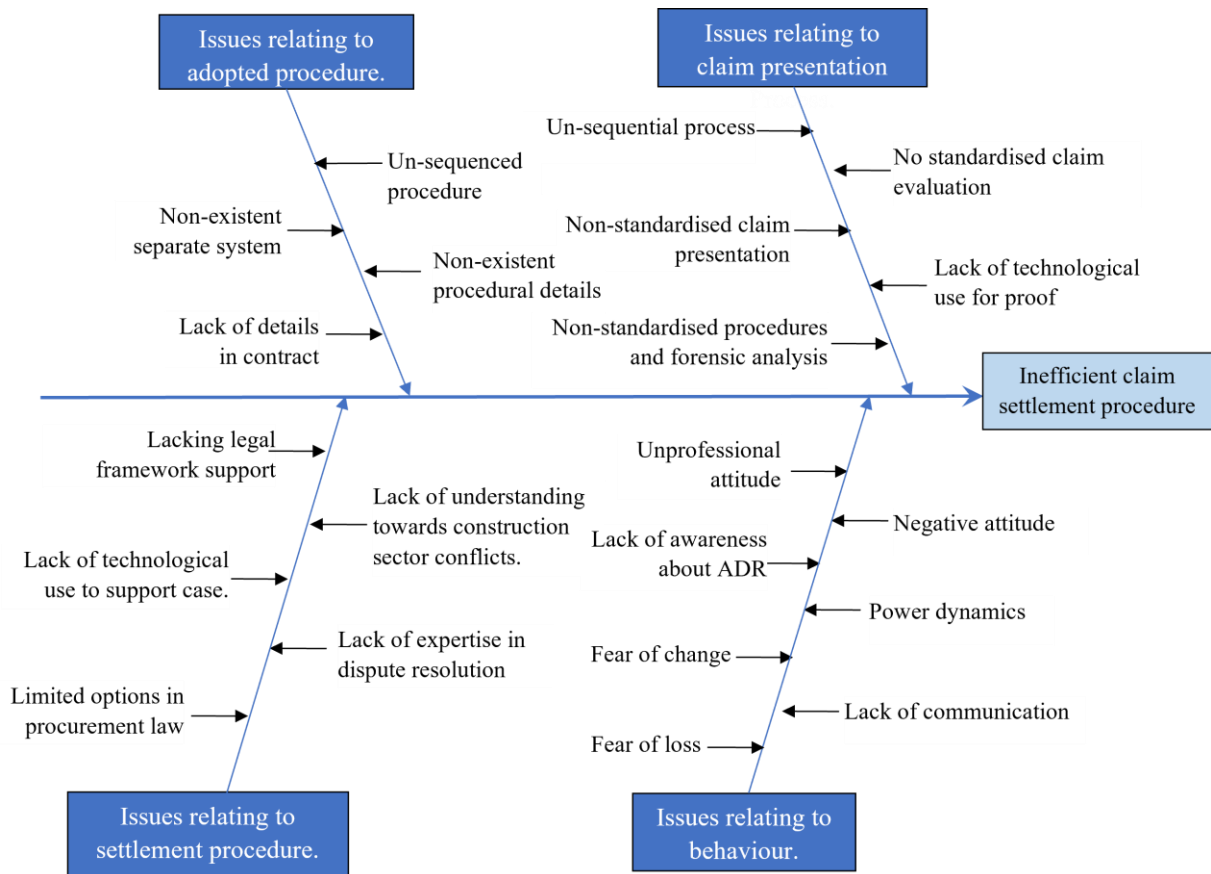


Figure 4-4 Cause and effect diagram of causes of the inefficient claim settlement procedure

Figure 4-4 illustrates the cause-and-effect diagram with factors identified under each cause group, leading to the claim settlement procedure’s inefficiency.

The factors are linked. The absence of a separate system generates minimum to no information regarding the sequential steps interlinks to the procedure’s ambiguity to follow in case of conflicts and claims. Attitude is the most influential factor as the fear of loss underplays all other issues. The effects of the issues are interlinked and manifest inefficiencies.

Table 4-2 shows the effects of the factors and the interlinkages.

Categories of issues relating to claim settlement	Effects of the factors
Issues relating to the adopted procedure.	<ul style="list-style-type: none"> • Clarity of the sequential steps • Clarity of the stepwise approach towards conflict resolution

Issues relating to the claim presentation process.	<ul style="list-style-type: none"> • Claim submission • Clarity regarding support documents • Non-standardised practices creating ambiguities
Issues relating to settlement procedure	<ul style="list-style-type: none"> • Availability of choices to resolve conflict. • Legal infrastructure to resolve conflicts. • Awareness of conflict-resolution methods • Usage of alternative dispute resolution methods
Issues relating to behaviour	<ul style="list-style-type: none"> • Adoption of flexible approaches. • Resolution process - takes more time. • Underlying effects on performance • Established behaviour takes longer to approve

Table 4-2 The effects of the factors on the issues of claim settlement.

The issues are interlinked and result in inefficient claim settlement procedures - see Figure 4-5.

4.4 Claim management process:

In designing the conceptual framework, the first step is to interpret the claim management process as a flow of activities as they occur. To develop the framework for the code of best practice, the first and foremost step is to understand the claim management process.

The process can be depicted by cause-and-effect diagram (Figure 4-2 and Figure 4-4). At the first step, there are the factors that cause delay, and effect is in the form of disruption or conflict. This is interlinked to the next cause and effect diagram (Figure 4-3 and Figure 4-5), showing the causes affecting the claim settlement procedure negatively.

For a broader understanding, the causes mentioned in Figure 4-2 and Figure 4-4 needed to be categorised and the causal factors further segmented into groups – Table 4-3.

Issues in the:	Related to (categories):
Pre-construction phase	Design
Contract drafting	Contract administration
Construction phase	<ul style="list-style-type: none"> Construction process Project/Site management Uncontrollable events Bureaucracy and governance.
Claim settlement	Claim management

Table 4-3 Issues categorised by phase

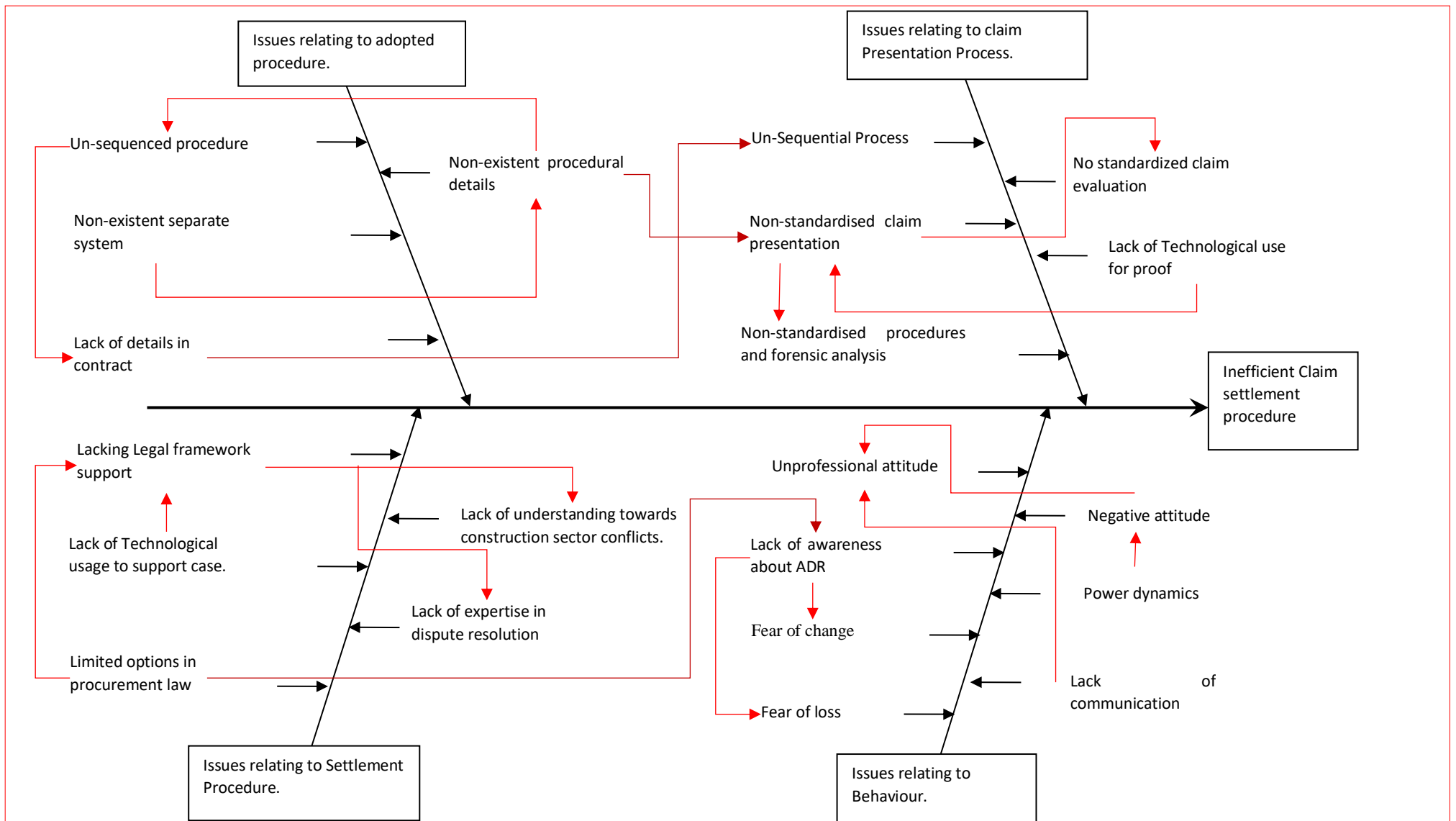


Figure 4-6 Interlinked Cause and effect diagram of causes of the inefficient claim settlement procedure

Figure 4-7 shows the claim management process. The categories identified previously as factors causing delays are initiators of the problems/conflicts/disputes. The flow chart starts with the categories causing disruptions.

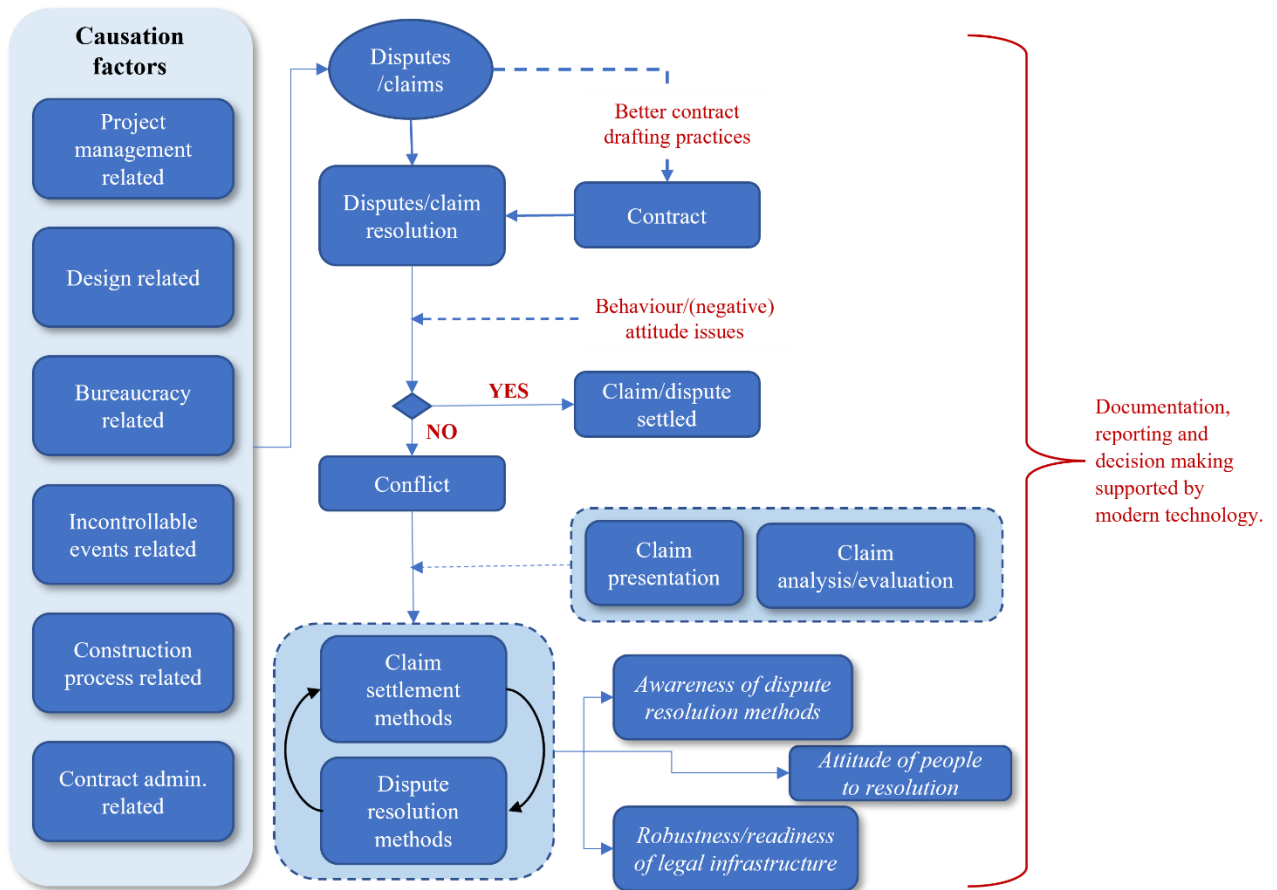


Figure 4-7 Claim Management Process (Flow chart)

Dispute and conflict are often interchangeably used; and many authors do not differentiate between them (Moore, 1989), but they are two different notations (Fenn et al., 1997). Incompatibility of any kind, either its interests or actions, will lead to conflict. Such situations could be managed to the extent that it does not aggravate to become a dispute. The interdependence among the parties and the issues like self-interest, opposition, scarcity of resources, and blockage behaviour (Thomas, Smith & Mellot, 1994) and incompatible activities amongst the team originate the conflict (Deutsch, 1973).

From a construction project perspective, Vorster (1993) suggested that differences in understanding the situation involving operational activities of the project between two or more involved parties leads to an argument. Such arguments, if not settled, will result in conflict.

A dispute arises when a claim, or any assertion made by one party, gets rejected by the other party, and that rejection is not accepted by the first party (Kumaraswamy & Yogeswaran, 1998).

Conflicts arise from three major root causes (Williamson, 1979; Jaffer et al., 2011)

- Behavioural problems
- Contractual problems
- Technical problems (arising due to uncertainty and low experience)

At this point, the stakeholders or actors involved in the process should seek to settle the situation. It can be seen as a “cooling time” available for the involved stakeholders to settle the conflict easily.

At the start of such conflicts, the first (ideal) step is to resolve them as soon as possible. Taking fewer resources in terms of time, cost, and professional relationships. The most relevant factors at this point are the “contract drafting” and “attitude”. Mostly “resolving” very much depends on both factors.

An important dynamic of this process is the “contract drafting practices” adopted. Issues with contract drafting practices are highlighted in many studies as being the root cause of disputes. Contract documents are regarded as the major origin of disputes (Jaffar et al., 2011), with clarity and completeness of document at the time of drafting being the main factors that create problems.

The definition, interpretation and clarification of the contract initiate many disputable issues (Diekmann & Girard, 1995). Defects and omissions in contract documents are regarded as one of the five primary sources of disputes (Hohns, 1979). The clearer and more elaborative the contract is, the easier it is to interpret and resolve conflicts and act as an “enabler” to the process of “resolving”. Discrepancies and ambiguities in contract documents lead to different interpretations and are the foundation of problems at the settlement stage (Fenn et al., 1997).

The factors often under dispute and which generate arguments amongst the parties are: variations; time extensions; payments, technical specification quality; information availability; administration and management; and unrealistic client expectations (Kumaraswamy & Yogeswaran, 1998).

The second important factor is the attitude of the people and their different needs. Disputes can arise due to the “difference or collision of these needs”. The personality, culture and professional backgrounds, education, individual’s ambitions, desire to grow, communication, power, ethical beliefs and interaction amongst the members initiate problems (Jaffar et al.,2011). Contractors want to see good performance, profit and a strong order book. The designer needs recognition of his art, while owners’ needs are related to corporate, political, public or social aspects. Any of these, when colliding with one another and their specific goals to a certain entity not being fulfilled, creates friction and disputes (Camicheal, 2002).

Every individual has an identity and self-image that they want to maintain (McManamy, 1994) - the protection of self-image, goals, urge of recognition and power (Vorster, 1993). In the case of construction claims, other than money, an important aspect is loss of face (Jaffar et al., 2011)

The herding instinct is dominant in construction industry people where they need acceptance and recognition. In resolving conflicts, it is important to make involved parties realise that the resolution will achieve favourable results or achieve/improve their strength within the group (Carmichael, 2002).

People are the prime cause of, and solution to, disputes in construction projects. Dispute over contract interpretation, unfortunate occurrences or differences in understanding need careful insight of the people involved (Hohns, 1979). Generally, disputes can be resolved much easier if all the egos involved can be maintained (Jaffar et al., 2011).

Attitude and human behaviour are an important dimension of the conflict. Human behaviour plays an underlying factor in soothing or aggravating a situation. Many factors act as a breeding ground for inflating the conflict instead of calming the situation, including (Cheung & Yiu, 2007):

- Negotiators’ lack the experience in negotiating.
- Negotiation parties being unprepared.
- Too many issues brought forward to be talked about
- Desire to control proceedings by both conflicting parties.
- Conflicting parties are not interested in settling the issue.
- Expectations are unrealistic.
- Lack of leadership within the project team
- Lack of trust in the mediator and between parties.

The parties' willingness to resolve conflicts is, by far, the most important factor. The fear of loss plays another underlying factor that agitates the situation. Conflict of interests and safeguarding personal interests also worsen the situation, at this point, the conflict could be settled with effective management. Failure to do so will result in a dispute being initiated. The factors that are important at this point are mentioned in Figure 4-7.

At this stage, many requirements need to be met. The most important aspect of the process is the presentation of claims and claims analysis. It is an interdependent process where contractors submit their notifications for possible claims or accounts with breakdown and evidence. The claim is submitted to an engineer who, on behalf of the client, will accept and inform the client to either accept or reject the contractor's demand invoking re-quantification or conflict. Many inhibiting factors play a part in the process of claim presentation that follows.

Claim presentation deals with how the claims are forwarded, the supporting documents and the procedure to present supporting evidence. Claim analysis explains how the forensic analysis of the cause will be done and will be used to evaluate the claim and present the claim settlement.

It is of utmost importance to have standardised processes that can make these procedures well organised and transparent. The inclusion of technological support and modern improved IT tools can ease the process of presentation as well as analysis.

Documentation and reporting processes play a significant role in the process. Changes, variations and requests for alterations need to be properly logged, which requires a synchronised reporting system. Centralised data applications make data available to all relevant stakeholders making it possible to take decisions at the right time. All these small factors merge to play bigger roles in the longer run.

The sequence of claim settlement methodology is very important and can take conflict towards resolution gradually from least detrimental to the most damaging. After the claim has been presented, legal support, behaviour, and ADR awareness become influencing factors.

Behaviour envelops the factors underlying the process of settlement, with attitude playing a major role. This is followed by the legal infrastructure's readiness to adapt to ways where the process could be finished rapidly. The robustness of the legal infrastructure to support and listen to such claim cases is the most important disruptor at this stage.

With respect to the KSA construction industry, the negative influencers are attitudes and the lack of legal infrastructure; these do not support quick decision-making. The lack of specialised

conflict resolution methods and understanding conflicts in construction sectors play a large and complicated role.

The next step is to unfold this whole process (as shown in Figure 4-7) and dissect it identify the issues and the recommendations to design the settlement process. In designing a conceptual framework, the factors causing the problems, aligned with preferred recommendations for improvement need to be identified. This will help in codifying the framework for the code of best practice.

4.5 Overview of core causes and their effects:

The next step in building up the conceptual framework is to link the claim management process to the identified causes and their effects. To do so, the relevant issues and disruptors that are part of the whole process need to be highlighted, especially the negative aspects they imbed in the process.

For structuring the conceptual framework, the causes and effect cycle will be connected to “needed improvements” and “recommendations” in the later stage of the discussion. Section 4.6 will identify the vacuum that needs improvements and recommendations to fill it.

The claim management process as explained in Figure 4-7 needs to be viewed with respect to "cause and effect cycles" presented in Figure 4-2 and Figure 4-4.

The first step is to understand the core problem areas as categorised in Figure 4-7.

Figure 4-8, Figure 4-9 and Figure 4-10 shows the whole process of understanding “the core causes “, their interrelationship with “other core causes and then their effects” on “independent /dependent core causes”.

The process (as shown in three figures) builds up the clear understanding of the causes and their interrelationships.

The figures present issues and the factors associated with a specific “area” of the core categories. To understand and codify the best practice, it is important to understand the “origin of the cause or the disruptor”.

4.5.1 Design-related issues:

The design process is the most important step in the pre-construction phase of the project. It is the crux of the project as all the details originate from this step. Thus, any problems in the design process are the root cause of any construction process issues later.

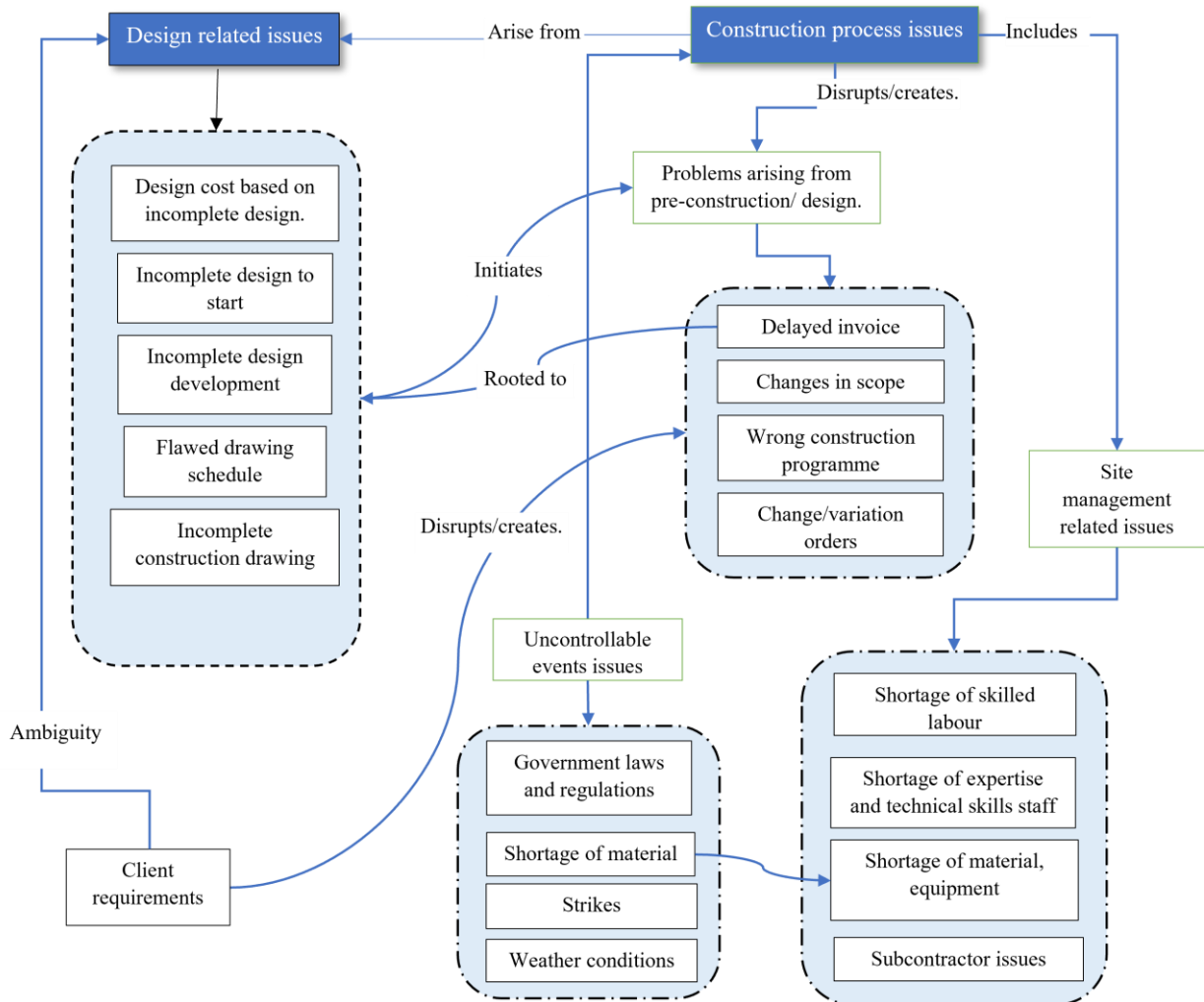


Figure 4-8 Factors associated with core causes categories - Design and construction issues

Figure 4-8 represents the start of the construction project. Design-related issues cause the construction process issues. Design deficiencies and defective plans are two of the most significant factors that raise conflicts in the operational stages (Hellard, 1992).

If the design or the design development is not complete, it creates problems at the implementation stage. Similarly, erroneous or inappropriate design with reference to the client's requirements and the site conditions will need variations and changes.

An important aspect of this stage is the lack of modern applications and equipment in KSA which can give rise to errors. Yet, there are many tools and applications available that use modern techniques to build the design and render the aspects in 3D.

It is simply not just an incomplete design or erroneous design that later needs amendments and changes, but they also affect the tender documents used in the bidding process, which feeds into the contract documents later. Tender documents form the basis of schedules, costs, shop drawings, working drawings, work breakdown structures and the construction programme.

The effects of these inefficiencies are change orders, variation orders and changes to scope /work. Such occurrences often cause a delay in invoice payment which creates financial issues in the cycle. Delayed invoices become a bone of contention between the parties. The inter-relationship between these aspects is shown in Figure 4-8.

The pre-construction phase can create problems in the construction process. Ambiguities in the client's requirements can lead to changes and disruptions in the later stages. The lack of communication and involvement of the client in the design process is a big issue that later creates problems and dissatisfaction.

4.5.2 Construction process issues:

Construction process issues include site management and project management. Both are interlinked but, in this research, they have been categorised separately to keep track of problem initiation.

Uncontrollable events, including external factors, can disrupt the construction process. Weather conditions (a major impacting factor), material shortages, government regulations and laws, and strikes or natural disasters all disrupt the project's progress in KSA.

Government policies, laws and regulations significantly impact the construction sector, so any move to ease restrictions/complexity will help its development. Bureaucracy can complicate the process and inflict delays and make investors less interested. Collaboration is important; consensus amongst the governing bodies and the industry on laws and regulations would ease the management of projects. The gap between government and industry needs to be narrowed to conceptualise better practices and mitigate the effects of claims.

Site management-related issues are a major factor that causes disputes especially with reference to unskilled labour force. Furthermore, there is a scarcity of technical expertise in KSA and the

shortage of a skilled workforce is negatively influences performance (Al-Kharashi & Skitmore, 2009; Assaf & Al-Hejji, 2006; Albogamy, Scott & Dawood, 2012; Mahamid, 2014; Al-Emad et al., 2017). This difference between labour demand and supply is crucial for the KSA sector in the long terms. Site management issues are very much likely to be directly arising from external issues such as the shortage of raw material in the market are external factors and uncontrollable issues but affect the project, creating lags and delays.

An important dimension of “site management related issues” is that they must be planned and managed by the contractor. A major issue in KSA is the lack of synchronisation and planning. Whilst many projects are being planned, long-term planning is lacking. The failure to develop strategic planning and scheduling in the booming KSA industry has led to the crisis of meeting the needs of labour, material and equipment (Al-Kharashi & Skitmore, 2009).

The effects of these factors are reflected in the quality of work. Unsatisfactory quality and completion cause rework and non-approvals, which costs money and time.

Subcontractor work is a part of the site management issues. There is on-site and off-site construction work that needs to be subcontracted, which are linked to the contract agreement and the conditions written at that time. The shop drawing by suppliers and subcontractors are linked to the tender document stage. The quality of subcontracted work, in terms of time and performance, affect the project negatively (Albogamy, Scott & Dawood, 2012). The suitability of the qualifications of subcontractors is regarded as one of the indirect causes of legal disputes in Saudi construction projects (Mahamid, 2014).

Subcontracted work, the procurement system, the supplier’s capacity, the labour skills, and the scarcity of materials are interdependent factors.

Overall, client requirements are the ones that form the foundation of the project and its required performance and quality. The client’s requirements and approvals finalise the design work. The client is (and should be) the active participator in the design development stage of the project. Ambiguities can arise from client requirements in the pre-construction phase and during the design process. The same ambiguities can impact the construction programme. This is the situation that creates the “most conflicting issues “in the implementation stage.

The next part of the interrelationships and issues is shown in Figure 4-9. This is the continuation to Figure 4-8.

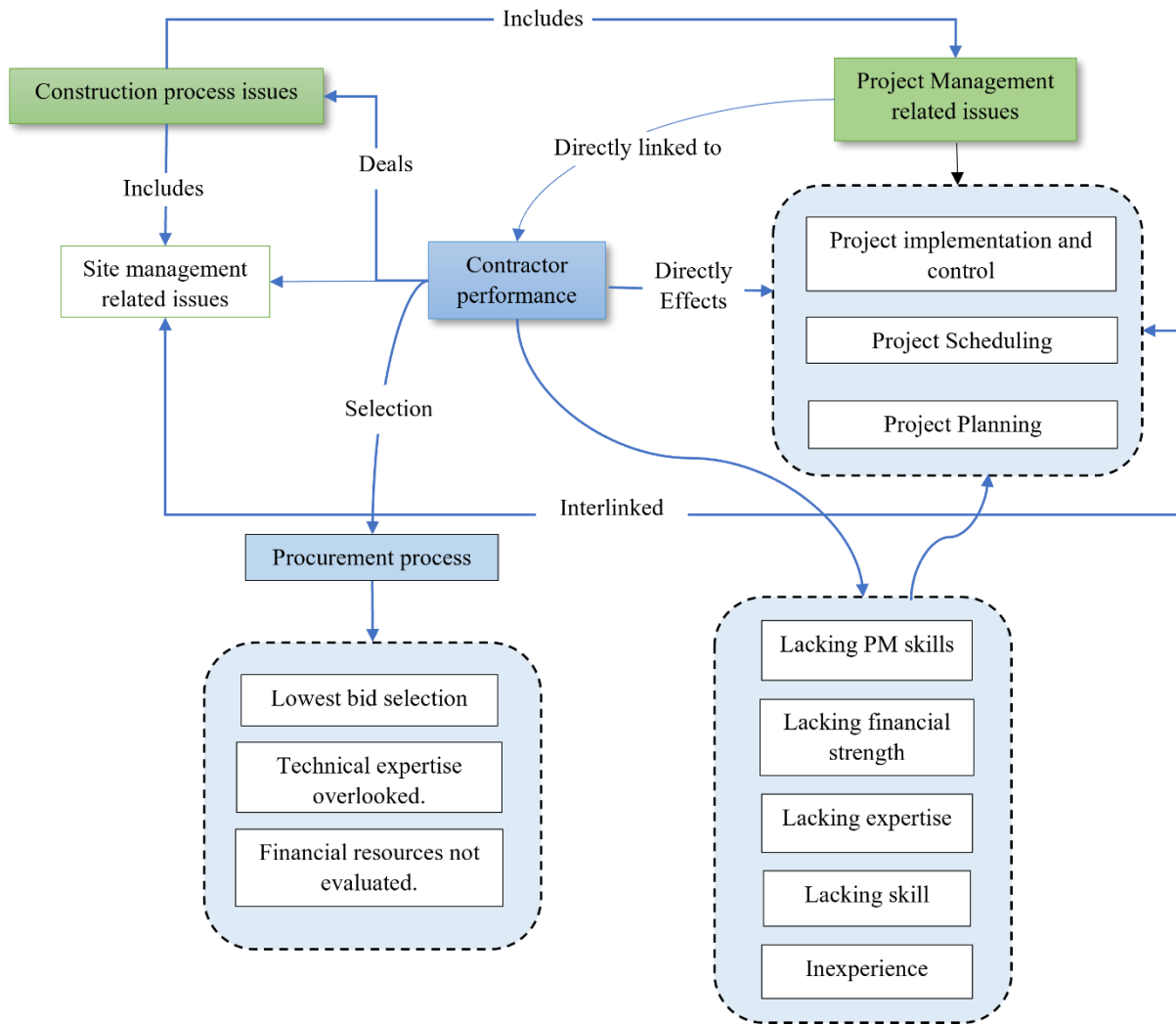


Figure 4-9 Factors associated with core causes categories – construction and PM issues

4.5.3 Project management-related issues:

Project management is a very important dimension of project performance and is the backbone of project success. Project management related issues are divided into the following categories (as shown in Figure 4-9 a continuation of the process started in Figure 4-8):

1. Project implementation and control
2. Project scheduling
3. Project planning.

The milestones of the project depend on its planning and scheduling. Proper management means answering basic questions like how, when, where and by whom. The implementation plan is linked to the construction programme (tendering stage), where it is defined how the

project will be completed and what resources the contractor needs to complete it. The programme outlines the processes to be employed, and how much time processes will take to complete. This is directly linked to contractor performance. As shown, the contractor is the focal person who must deal with all these issues.

Management aspects of the project, especially scheduling, planning and control, are interlinked to site management related issues. The contractor must meet the deadline with the agreed cost and quality. The site-related factors are one big influencer in this regard and affect the quality and speed of work.

The project control category from project management related issues categories is the basic influencer in site management. This relates to how good the contractor has managed to plan, monitor, and control.

The eligibility, expertise and ability of contractor are core factors that can be regarded as the foundational drivers of project performance. Project implementation and meeting project management millstones and quality benchmarks are the “measuring gauge” of a contractor’s performance. Project management is a crucial factor in project performance and is solely the contractor’s responsibility.

The contractor also has to deal with site management related issues, which come under project planning and scheduling in broader terms and construction process-related issues. The procurement/contract awarding process also has an impact on contractor performance-related.

KSA contractors lack project management skills. Contractor expertise and qualification, ineffective project planning and scheduling, poor site management and supervision, unqualified team and engineers and financial issues are highlighted as core causes of delays (Elawi et al., 2015; Assaf & Al-Hejji, 2006; Al-Emad et al., 2017; Mahamid, 2014)

Payment schedules may be agreed, but, in the case of changes in design, variations or any such disruption, the payment gets delayed. The delayed invoices or payments create financial problems for contractors.

It can be seen that many problems are rooted in the initial stages (pre-construction/design process) on which the efficiency of those phases depend. The interdependence of these issues creates a more complex horizon to be resolved. When these issues create disputes and claims, the conflicting parties do not agree on the terms, and the problem lingers on.

Another element of contractor performance is the adopted procurement process (see Figure 4-9). Contract awarding in another weak link in the KSA construction process system with contracts are awarded based mostly on lowest cost (Assaf & Al-Hejji, 2006; Mahamid, Alghonamy & Aichouni, 2015), ignoring all other aspects. As the survey shows, the project's special requirements or expertise are usually not considered the decisive factor. Technical specialities are mostly not evaluated.

The fact that tendering documents also are erroneous increases issues with the financial calculations of the project. This, in turn, leads back to the pre-construction phase and shows the relationship between causing factors and their effects later in the project. Problems are interdependent, and cause and effect relationships could be interpreted in this cycle.

4.5.4 Government-related issues:

Figure 4-10 is the continuation of the core causes and factors associated with it and shows the government-related issues. Bureaucracy and its related issues are a major aspect of the construction process, with delays and issues in granting permits and approvals. The government laws also impact the project regarding its rules and procedures for all the legalities, liabilities, paperwork, qualification, licensing and approvals.

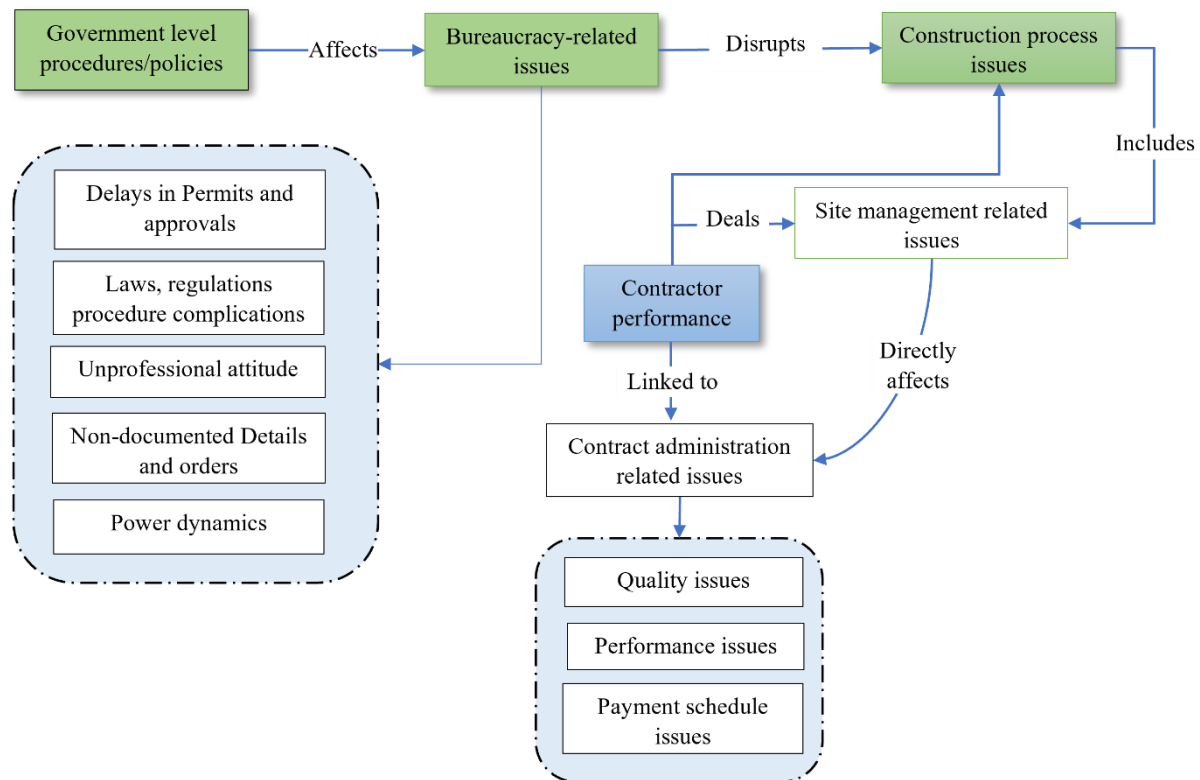


Figure 4-10 Factors associated with core causes -government and bureaucracy issues

The research highlighted that even government agencies ranked excessive bureaucracy as a very important cause of delays (Assaf, Al-Khalil & Al-Hazmi, 1995) and that the difficulties of getting work permits led to restrictions/problems in time and work processes (Al-Khalil & Al-Ghafy, 1999). This is the deep-rooted cause of many delaying effects that could be tracked in the system.

4.5.5 Contract administration issues:

Contract administration related issues directly affect site management related issues. It includes details regarding completion, quality control, administration of work, substantial and fully completion inspections, and subcontractor work (as per contract document).

Contract administration is a big part of claim management. The contractor needs to understand the terms and conditions of the contract and have a clear understanding and close observation of the day-to-day events and issues happening in the project. (Griffin, 1993).

Notification and documentation are the two of the most important factors that the contractor needs to generate and keep a record for administering the contract terms and events happening (Rauzana, 2016). Contract management is very important and highlighted in every study to be the root cause of problems being faced at the site and raising conflicts (Al-Emad et al., 2017; Mahamid, Al-ghonamy & Aichouni, 2015)

4.6 Conceptual framework for code of best practice for claim settlement:

The literature review helped to identify themes and issues and the knowledge gap regarding construction claims and their settlement within the KSA context. It underpinned the work to produce a systematic approach to mitigate negative effects.

Based on these findings, an interview questionnaire was designed. The literature and the analysis of the one-to-one interview with industry professionals helped identify the factors that cause a negative impact on the process – see section 4.3.

The next step is to determine the vacuum where improvements are needed. The factors were analysed to identify the gaps in the present system. The void was then aligned to lay down the categories for needed improvement areas on broader terms – see Table 4-4.

Factors	Category of improvement falling into
Design related	Pre-construction level
Construction process	Operational level
Uncontrollable events	Operational level
Contract administration	Operational level Project management and control
Bureaucracy and Governance	Operational level Industry level
Project/site management	Operational level Project management and control Industry level
Industry-level improvements	Industry level
Claim settlement	Claim management level

Table 4-4 The factors and their categories of improvement

The categories identified as needing improvements are shown in Table 4-4.

1. Pre-construction process.
2. Operational level.
3. Industry level.
4. Claim management.

The category “Operational level improvements” encapsulates project management and control improvements, along with operational level items.

These improvements are linked to the causation factors and highlight the “crux of initiation of the problem”. Following improvements are the recommendations, which will reflect upon the core problem area and designed with reference to the improvements needed in that area.

To achieve improvements, the identified categories of recommendations are as follows and shown in Table 4-5.

Improvement	Category of recommendation
Preconstruction process	<ul style="list-style-type: none"> • Design process • Tendering & contract awarding

	<ul style="list-style-type: none"> • Contract drafting
Operational level	<ul style="list-style-type: none"> • Project management and control • Supply chain management
Industry-level	<ul style="list-style-type: none"> • Standardised Performance benchmarks and classification of sector • Information Management (communication and collaboration) • Modern IT tools and applications • Competency Building • Robust and readiness of Legal infrastructure
Claims management	<ul style="list-style-type: none"> • Claim settlement methodology improvement. • Standardization of Practices. • Robustness and readiness of Legal infrastructure.

Table 4-5 Categories of recommendations to achieve needed improvements

Figure 4-11 shows the framework for the codifying the best practice within the KSA context. To propose the strategies and measures to fill in the framework, professionals' opinion and available secondary data will be used. A second interview questionnaire is also designed to recommend the best practices in light of "needed improvements".

Using Olawale and Sun's (2010) and Owusu-Manu, Asiedu & Adaku's (2017) approaches towards mitigating the negative effects of the causes, preventive, predictive and corrective measures can be classified as:

- *Preventive measures*: Precautionary active measures initiated at the planning stage.
- *Predictive measures*: Measures in place to control problems spotted in planning or to stop them from happening in the future.
- *Corrective measures*: Reactive measures to rectify a situation that has occurred and revert /correct the problems that have happened. It is to mitigate /lessen the effects of hindering factors on project control and cost. These are further classified into:
 - *Corrective-preventive*: correct and, in doing so, prevent future occurrence of such problems.
 - *Corrective-predictive*: restorative and curative actions for current problems and prediction of future situations based on current information.
- *Organisational measures*: The broader measures shaped by the company beliefs philosophy, management style, work ethics and not specific to just one project but reflected in all projects undertaken by the company. The practices have a wider horizon of practical implications that surpass cost and time factors but impact the control process eventually.

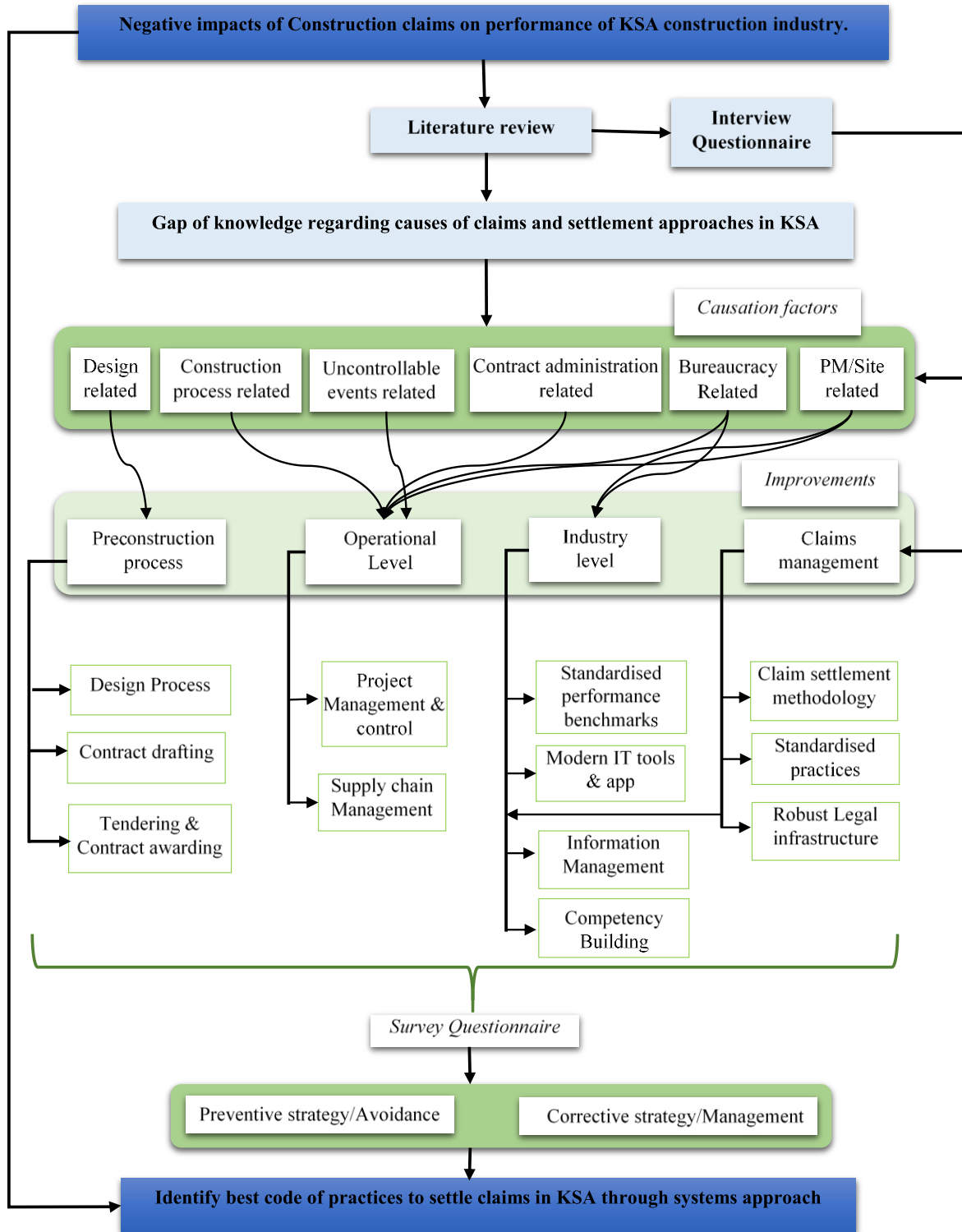


Figure 4-11 Conceptual framework of claim settlement for code of best practice

Instead of considering organisational measures, the focus will be on industry-level measures. Each mitigating measure will be discussed and brainstormed with iterative rethinking aimed at

mitigating effects and meeting the expected results. These measures will be properly synthesised through the interview session with the professionals and then further analysis.

The focus will be on preventive measures, with the ambition to develop some long term and short-term strategies associated with these measures to make recommendations implementable. The outcome from industry-level measures will be to improve the foundational aspects of project operation by developing strategies that encapsulate the overall working environment.

Some of the improvement areas are interlinked to other needed improvement areas. The relationship between them plays an important role in designing the practices that can lead to preventive, predictive or corrective measures. For example, robust legal infrastructure measures are needed for better claim management procedure. However, this is also an important factor in design practices for industry-level improvement measures, as it needs to encompass the broader perspective of attaining legal support to construction issues.

4.7 Summary

The basic themes of delays, effects of delays, contractual claims and claim settlement inefficiencies were identified from literature that lead to designing to semi structured interviews. This helped in verifying the aspects from literature to present day issues in KSA. Survey questionnaire was then designed for recommendation/measures to be considered for needed improvements.

Cause and effect (casual analysis) was discussed with regard to causes of delays and claims. This helped in identifying major categories including Issues relating to the pre-construction phase, procurement phase, contract drafting phase and construction phase .Similarly casual analysis for inefficient claim settlement process was performed to show major issues and their interrelationships. The major issues were related to the adopted procedure, claim presentation process, settlement procedure and behaviour.

Claim management process as initiation of action and its effects was drawn to understand the process and major causation factors. It was briefly discussed to highlight issues related to design, construction, Project management/site management, and Government related aspects, role of bureaucracy and contract administration issues.

A conceptual framework was then developed by identifying the needed improvements areas including Pre-construction process, Operational level, Industry level and Claim management

that were linked to crux of problem initiation. Categories of recommendations as identified through analysis were aligned with needed improvement area.

CHAPTER 5: OVERVIEW OF THE KINGDOM OF SAUDI ARABIA CONSTRUCTION INDUSTRY

5.1 Introduction:

The aim of the Chapter is to consider the characteristics of the KSA construction sector to understand the special environment in which projects are designed and delivered, and to consider this influences the incidence of contractual claims on public sector projects.

5.2 Overview:

The Kingdom of Saudi Arabia is an Arab Muslim state in western Asia that comprises most of the Arabian Peninsula. It is the largest sovereign state in the Middle East, the fifth largest in Asia with an area of 2,150,000 km² (830,000 mi²), the second largest in the Arab world after Algeria, and the twelfth largest in the world.

The KSA population is 34.81 million (World Bank, 2020), most of whom are Muslims. The state religion is Islam and the official language is Arabic. The capital and largest city is Riyadh. Borders are shared with: Jordan, Iraq, Kuwait, Qatar, Bahrain, the United Arab Emirates, Oman, and Yemen (see Figure 5-1).



Figure 5-1 The Kingdom of Saudi Arabia

Maritime borders are shared with Bahrain, Egypt, Eritrea, Iran, and Sudan. The Red Sea lies to its west and the Arabian Gulf to the east. Most of the KSA terrain consists of arid desert, lowland, and mountains.

The KSA is in one of the most ancient places on earth, with traces of the earliest human activities in the world, including several ancient cultures and civilizations. It is home to Mecca, the birthplace of Prophet Muhammed and the holiest city of Islam, visited by Muslims from around the world visit as pilgrims. In the early 7th century, the Islamic prophet Muhammad united the Arab population, creating a single Islamic religion. Following his death in 632, his followers moved beyond Arabia, conquering territory from the Iberian Peninsula in the west to Pakistan in the east. The KSA is also called "the Land of the Two Holy Mosques," a reference to Al-Masjid al-Haram (in Mecca) and Al-Masjid an-Nabawi (in Medina).

Starting in 1902, Saud captured Riyadh, his ancestral city (the House of Saud), and he followed by capturing and uniting four regions, Hejaz, Najd, Al-Ahsa and Asir, into single state. The KSA was founded in 1932 by Ibn Saud, the Kingdom has existed as an absolute monarchy, effectively a hereditary dictatorship. It is ruled by the House of Saud along predominant lines of traditional Islam. The royal family dominates its political system, it has neither political parties nor national elections.

The KSA is economically stable, with rapid economic growth and a strong public and private sector. In 2020, it had the largest economy in the Middle East and the 18th largest in the world. The Kingdom is rich in oil reserves and is one of the largest global oil producers. Proven Saudi oil reserves are the second largest in the world at an estimated 268 billion barrels, it controls the sixth largest global gas reserves. The KSA is the only Arab state to be part of the G-20, the World Bank has categorized it as a high-income economy with a high Human Development Index rating.

Increases in population, urbanisation and tourism have caused KSA development initiatives to shift their focus to the planning of mega-cities. The KSA has made significant investments in projects such as buildings, bridges, hospitals, airports and power and transport infrastructure. In 2020, the KSA government allocated 46BN SAR (US\$12.2 billion) to its infrastructure and transportation sectors (Srinivasan, 2020).

The KSA's economic output comprises 1.2% of the global economy, making it the world's twentieth-largest economy based on GDP. While oil remains its most productive sector, the nation has shifted to making investments to help diversify its economy beyond the energy

sector (MLSD, 2016).

Economic investment in the KSA faces challenges, with a rank of 92 in the Ease of Doing Business Index and a Global Competitiveness Index rank of 30 (Doing Business, 2018; Doing Business, 2019; The Global Competitiveness Report, 2019). This suggests that significant progress will be required to achieve economic and legal reforms in the country (Alsolami, 2019).

5.3 The KSA construction industry:

The construction industry plays an important role in the socioeconomic development of the country. The KSA is undergoing a period of major economic change in what the International Monetary Fund (IMF) has called "bold reform". Under the Vision 2030 programme there is commitment to significant investment in the construction sector through developments in chemicals, energy and water, industrial and manufacturing, and health and life sciences.

A global decline in oil prices in 2016 and a high fiscal deficit reduced KSA government spending, reflected in a 1.9% contraction of its construction industry from an average annual 6.2% growth rate in the preceding four years (Cision PR, 2017). Whilst growth was forecast for the construction sector for 2017-2021, the pandemic, lower oil prices, and geopolitical factors had a major influence on investment. The KSA government recognises the importance of developing the construction sector for the long-term investment in infrastructure and construction projects, with support focusing on transport infrastructure, renewable energy and utility facilities, and affordable housing. A 6% annual growth rate is expected for the KSA construction market between 2020 and 2024 (Srinivasan, 2020).

KSA government support in stimulating and modernising the construction industry is reflected in the 2020 National Transformation Program (NTP) and Saudi Arabia Vision 2030 program. Plans include development of seaports, railway lines, airports, manufacturing facilities, infrastructure projects, energy and utility facilities and transport infrastructure. The focus is to reduce national dependence on the energy sector and to reduce unemployment. Sustainability has been at the heart of Vision 2030 since its inception. KSA is ushering in a new era as the Kingdom aims to reach Net Zero by 2060.

The KSA's construction market is classified into building, infrastructure, and energy markets. A special characteristic is the size of the energy market, with almost 30% of construction expenditure focused on energy. Population growth, urbanisation, and tourism have driven

growth in the building construction and transport infrastructure sectors. Major projects are underway in the Kingdom, such as the Jeddah light rail transit program, Neom Bay (a proposed gigacity on the Egyptian-Jordanian border), Berri Field, King Fahd Causeway, Passport Island, King Salman Park, Riyadh King Salman Air Base, the Mall of Saudi, Al Rayis development, Wadi Makkah, and an ammonia plant in Ras Al Khair. Many of these projects are funded by the government bodies including the Public Investment Fund.

The KSA infrastructure sector is the largest contributor to its construction sector expansion, with 1,999 active projects valued at US\$454.4 billion. The urban sector is the second largest contributor, with 3,316 projects worth US\$451 billion under construction, and the oil and gas industry, with 249 projects valued at US\$223 billion, is ranked third. Srinivasan (2020) stated that first quarter 2020 contracts awarded in KSA were worth US\$91.3 billion, with 5,564 ongoing projects valued at US\$1.1 trillion. Contracts expected in 2020-2021 include 705M USD for a saline water conversion corporation desalination plant, a Neom Residential Development award of US\$2 billion, and a National Contracting Company Limited award for a 380-kilowatt transmission line substation in Alaflaj worth 110M USD.

The estimated value of the KSA construction sector GDP in 2019 was 163.7BN SAR (approx. US\$43.5 billion) (Statista, 2021).

The KSA construction industry faced challenges during 2020 from the COVID-19 pandemic. Lower oil prices resulted in a significant decline in state revenues, which led to government-imposed restrictions on expenditure, a liquidity crunch, global supply chain disruptions, reductions in manpower capabilities, and movement restrictions.

Figure 5-2 shows the value of awarded KSA construction contracts for 2010-2020 by sector:

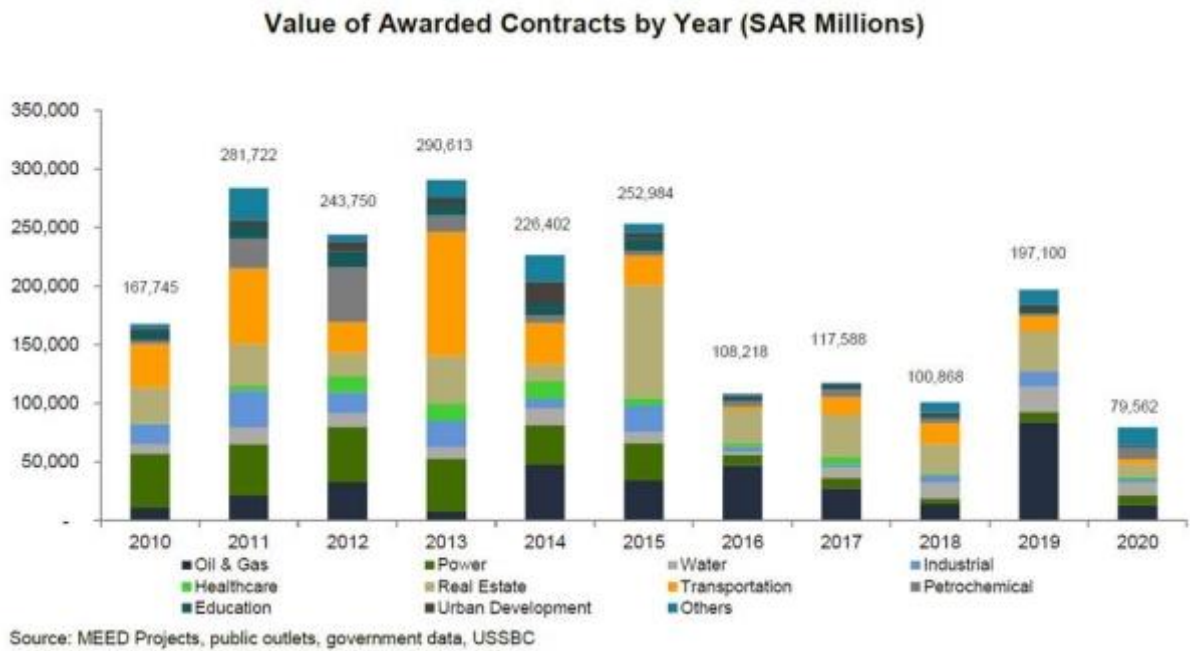


Figure 5-2 Saudi construction awards by sector, 2010-2020

The investment strategy is to transform the KSA into a post-energy economy in which its oil dependency is reduced. It is focused on large cities, as they will provide most of the nation’s future growth.

The KSA is within the Gulf Co-operation Council (GCC) construction market, with investment levels far higher than other GCC countries. The KSA construction industry has great future potential, with more than US\$250 billion allocated for upcoming projects, an amount equivalent to the second and third largest GCC markets of the UAE and Qatar combined (Meed, 2017). Several national and international companies have been contracted to deliver projects.

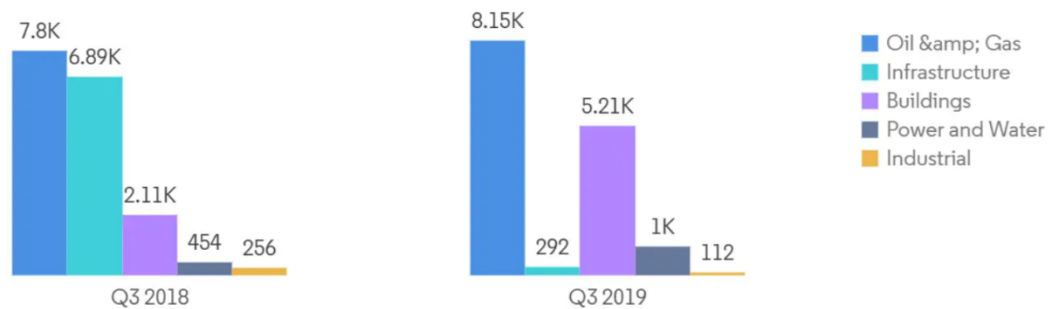
5.4 Market overview:

The expansion of the KSA market will require growth in public-private partnerships, joint ventures, and privatization of government entities. These actions are critical in expanding the country’s GDP from 40 to 65 percent by 2030 (Arab News, 2021). In response, a newly formed agency, the Saudi Contractors Authority, was created to regulate the KSA’s construction sector and increase market acquisitions (Arab News, 2021). The Saudi Contractors Authority (SCA) is a government subsidiary authority of Ministry of Municipal and Rural Affairs.

The KSA annual construction output was valued at US\$37 billion in 2020, with a forecast growth rate (CAGR) of 5.2% from 2021–2026. However, the COVID-19 pandemic caused the value of awarded construction contracts to collapse during the third quarter of 2020.

The urban construction market is the largest contributor to KSA construction expansion, with 3,727 active projects, followed by the utilities market with 733 projects. The transportation market stands in third place, with 500 projects (Figure 5-3).

KSA Contractor Awards split by industry, Q3 2018 - 2019, in USD million



Source: Industry Organisations



Figure 5-3 KSA contractor awards by industry (source: Mordor Intelligence, 2021)

5.5 Characteristics of the industry:

5.5.1 Operating environment:

The KSA has a desert climate characterized by extreme heat during the day, abrupt drops in temperature at night, and a very low annual rainfall, except for the western province of Asir. It is common for high temperatures to exceed 40 degrees C for several months in a row. The temperature in spring and autumn ranges from 29C to 32C and is temperate. The summer months presents challenges for site production teams. It is generally prohibited to let a worker work outdoors between the hours of 12 pm to 3 pm from 15 July to 15 September of each year. Labour law violations in 2020, amounted to 2,321 violations related to workers working outdoors "under the sun". If the work is done outdoors, the employee must take the necessary precautions and provide the safety measures prior to commencing work during extreme weather conditions.

There are many layers of specialty contractors, sub-contractors and sub-sub-contractors in the supply chain who use a variety of contractual arrangements. Labour brokers may be used to recruit workers from India and be responsible for their welfare and for obtaining the work permits. The broker will keep a percentage of the worker's wages to cover their costs and to

make a profit. This complicated arrangement can lead to disputes, particularly when late payments are involved.

The construction industry in the KSA is very fragmented, with many micro, small and medium sized enterprises. The smaller enterprises are usually owned by KSA nationals who may work across other industry sectors outside of construction. There are few major large contractors. All contractors must be registered and licensed by the government. Many core materials are imported from overseas. Suppliers and manufacturers are keen to enter the KSA market because of the opportunities for growth.

Design and engineering consultants must be registered by the KSA professional registration bodies in order to practice. For example, engineers must register with the Saudi Council of Engineers. Many international design and engineering enterprises have established offices and found that gaining registration is both time consuming and bureaucratic. Many large international consultants employ local staff to ensure registration is more straightforward. One of the requirements for the pre-qualification of contracting firms is that they have to be classified by the Ministry of Municipalities and Rural Affairs (MOMRA). Contractor Classification Law of 2006 is used to classify contractors. Contractors are graded from G1 to G5, which dictates the size of project a contractor may undertake.

5.5.2 Workforce challenges:

The KSA labour market is heavily polarized with most Saudi nationals working for the public sector, with the private sector relying mostly on foreign labour; there is nearly double the number of Saudis employed in the public sector compared to the private sector. People are one of the key driving forces for any company, industry, or country. It is the quality of their skills and knowledge combined with their efforts towards work that ensures the competency of a firm. The culture of the workforce affects their professional outputs and consequently the performance of the firm.

Female site workers, other than in an ownership or professional role, are banned by law from working on construction sites.

The construction industry is very dependent upon foreign workers for skilled and unskilled work. The attraction is continuity of work and wages that are remitted back to their home countries. Work permits are required for all foreign workers. Anyone moving to the KSA for work on a construction site must have an employer who can act as their sponsor. Furthermore,

the company must have visa approval from the Saudi Ministry of Labour to employ foreign nationals. The first step of getting an Iqama is to obtain a work visa. The employer must apply for this visa on their behalf. The employer becomes responsible for the employee whilst that are working in the KSA. The Iqama is limited to a duration of one or two years (depending on the length of your work contract), after which it will need to be renewed by the employer.

The KSA government's national plan pays considerable attention to the unemployment problem. The work force in the KSA is largely made up of expatriate workers from India, Pakistan, Philippines, Egypt, Jordan, Indonesia, Bangladesh, and Sri Lanka. The foreign work force consists of over 8.2 million non-nationals and has been growing at 12% per year (Ministry of Labour, 2020). As part of its policy of nationalisation or localisation, and to protect the rights of its nationals, the Ministry of Labour decided to replace expatriate workers with Saudi-nationals in the public and private sector (Alanezi, 2012; Ramady, 2013). This initiative, known as Saudization, was in response to the increase in the rate of unemployment among its nationals.

To control the increase in foreign workers entering the country, the government has made serious attempts to localise this cultural dimension, by enacting the Nitaqat law. Nitaqat is a Saudization initiation law introduced in 2011 by the Ministry of Labour. This categorises firms based on their size and grades them with a colour rating (platinum, red, green) which determines the status for employing foreign workers. The Nitaqat colour can be a decisive factor in getting a job in a company in the KSA. Organizations with very few employees (less than 10) are exempt from the programme, but larger firms must appoint one Saudi national for every 10 expatriate workers. When a foreign worker wants to renew their Iqama, the Nitaqat colour status of the company is very important.

While the KSA government wants to increase the participation of Saudis in the private sector, a survey by Oxford Strategic Consulting found that only 1% of the surveyed KSA nationals were interested in working in the construction industry, with most focusing on white collar jobs such as in the financial and legal sector. This means that the composition of foreign site workers in the KSA construction industry is unlikely to change in near future, except in senior positions.

5.5.3 Industry performance:

The KSA construction industry suffers from high rates of project failures (Ikediashi et al., 2014). Some of the reasons cited are a) poor project management knowledge, b) diversity of the transient workforce, c) poor implementation of regulations, d) lack of professionalism.

To this list can be added, burdensome bureaucracy and procedures, low ethical standards which are under government requirements to improve, lack of skills training, lack of investment in research and development, lack of local skills, over reliance upon foreign contractors to undertake the mega projects, over reliance upon foreign workers prepared to tolerate harsh working conditions, few large indigenous KSA owned construction firms, harsh climate for production workers, over reliance upon specialty contractors, and poor safety and health culture. Construction companies are attempting to tackle these problems; but they are felt to be national government issues.

Bubshait and Al-Musaid (1992) found that the public clients have a very low level of managerial involvement in their projects, which leads to miscommunication and contributes to project failures. Public clients seem to have a low level of involvement in the planning and design phase, where client requirements are converted into design solutions. This means that there are frequent design changes at the production stage. Poor involvement of client/customers means that contractors do not have a full understanding of client requirements, which affects their ability to satisfy them.

The construction industry faces a lack of capable local contractors, consultants, and local workers. To fill this void, the government is forced to welcome foreign contractors and allow private sector firms to recruit skilled and unskilled labour from Asian and African countries. There is a shortage of raw materials. The distinctive characteristics of the Saudi work environment are listed below.

a) Most Saudi firms must depend on foreign technology and expertise for producing products and services. Poor technological orientation of KSA society means that using foreign technology and expertise can be a problematic. This means they often tend to rely on professionals from technologically advanced societies to undertake decision-making roles. This is evident in the large proportion of western expats in senior positions in the KSA construction industry.

b) Most contractors are family-owned firms. Such organizations are centrally controlled, and the control remains in the same hands for a long time. Such organizations often fail to improve because they rely on the knowledge and vision provided by a single individual.

c) The expatriate work force has created a multi-cultural work environment. In most cases a diverse workforce will be an asset, but in the construction industry, diversity can prove to be a

hindrance because it leads to issues such as different cultural perspectives of quality, communication issues etc.

d) Construction firms are required to procure materials for public sector projects from local suppliers. This creates a sort of monopolism of the market in which the local suppliers tend to collude and set their own rules and prices.

e) Foreign contractors are required to sub-contract a maximum of 30% of the value of the contract to wholly owned KSA firms under the Council of Ministers Resolution No. 124. This creates a form of incumbency in which local firms win contracts not on basis of their competency, but for the sake of compliance with this law. There is an unfair advantage for local firms who win contracts because they need not abide by this law as this is applicable only to foreign firms bidding for contracts in KSA.

f) Natural factors such as the harsh desert climate affect the productivity of construction workers.

g) Job creation is a serious issue facing the government with most of the workforce in the construction sector being foreigners., It seems that most Saudis do not want to work in the construction industry except in white collared positions. This makes the situation very difficult for construction industry players who are left confused over how they can comply with the Saudisation laws as there is not enough supply of local manpower.

5.5.4 KSA construction industry legal framework:

The complexities and challenges the KSA construction industry faces have been considered. One major issue concerns conflicts that arise due to the range of construction methods and contract specifications applied in the industry. The challenging legal issues the industry faces if not addressed properly could hinder KSA economic growth.

Some of the most complicated issues with respect to Middle East construction legal disputes are dispute resolution practices. In 2018, the average value of dispute claims in the Middle East was US\$57 million with an average resolution length of 20 months (Arcadis, 2019). Construction project delays account for an average 39% of construction contract time in the Kingdom (Elawi et al., 2016, p. 1402; Abdelhadi et al., 2019, p. 329).

The major causes of construction disputes in the Middle East include (Arcadis, 2019):

1. Poorly drafted, incomplete, or unsubstantiated claims.

2. Failure to professionally administer contracts.
3. Owner/contractor/subcontractor failure to understand and/or comply with contractual obligations.

Private and public sector contract disputes in KSA are estimated at around US\$800 million, or about 40% of state budgets (Alnomci, 2012). These figures suggest a challenging situation for the KSA construction industry. Thus, the need exists to devise new models for addressing and settling Saudi construction claims in more efficient and timely ways.

5.5.5 KSA construction contracts:

The KSA government employs its own standard contracts for public works projects delivered by both domestic and international contractors. These contracts are accessed through government offices (www.saudiembassy.net). A non-negotiable aspect of these contracts is that they must be written in Arabic. For private projects, parties can work in any language.

The most prominent procurement systems within the public sector are fixed price (lump sum contract), quantity with unit price contracts, cost reimbursable or cost-plus contract and the two-stage tendering mechanism (Al-Hazmi and McCaffer, 2000). The problem with the current system is excessive focus on price, with little attention paid to quality or best value. The use of most economically advantageous tender (MEAT) is not used.

The basic principles of Saudi construction law include (Blanksby, 2011):

1. As an Arab Islamic state, Saudi law is based on Shariah and thus has two main sources: the Holy Quran and the Sunnah.
2. There is no civil code.
3. The KSA government enacts specific laws when needed to supplement Shariah law.
4. Private parties are free to negotiate contract terms in any language, but in the event of disputes, contracts must be translated to Arabic before presentation in court.

Government and public sector contracts have defined requirements for drafting contract structures. Applicable Saudi laws include:

1. The Government Tender and Procurement Law (2006).
2. The Public Work Contract (1988).
3. The Draft Construction Contract (2010).

4. The Saudi Building Code (SBC).

The Saudi Public Works Contract (1988) is based on the third edition of the International Federation for Consulting Engineers (FIDIC).

The standard Saudi contracts used for both domestic and international projects include the FIDIC contract suite and standard government contract formats. Certain custom agreements are also used in domestic government projects. For international projects the same formats are used, with FIDIC contracts used most widely.

"The public construction contract" used for public projects has been widely criticised for being very unfair and for allocating too much risk to contractors. (Abbas, 2000).

In addition to FIDIC, the American Institute of architects (AIA) and oil industry contract formats, which are design/build contracts that cover oil industry projects, are also used. (Al-Sabbali, n.d.)

5.5.6 KSA dispute resolution methods:

The most common methods for dispute resolution in the Middle East (Arcadis 2019):

1. Party-to-party negotiations.
2. Arbitration.
3. Mediation.

The KSA legal system is comprised of:

1. The Board of Grievances.
2. Shari'ah courts.
3. Committees divided by categories based on the nature of the cases at hand.

Disputes in KSA are typically resolved using global arbitration bodies and local litigation processes (Alshahrani, 2017). One method of dispute resolution follows the 2012 Saudi arbitration law, the Saudi business law stipulates that local courts should resolve disputes involving government ventures (Alshahrani, 2017). These two factors have helped to standardize the use of arbitration procedures and their legislative structures. These laws are typically specified in construction contracts and use arbitration as the prevailing type of dispute resolution (Cowling, 2014; Alshahrani, 2017).

Criminal and civil cases are conducted by the Saudi Ministry of Justice (Alshahrani, 2017). Saudi Shariah law courts are vested with all state legal powers, including those involving civil, family and property matters. Other adjudicatory bodies have also been granted special powers to hear and resolve special cases. (Ismail et al., 2012; Alshahrani, 2017).

KSA construction firms often engage in litigation to resolve public sector disputes, but many barriers remain in these processes, including the relatively small number of KSA judges and courts (Ansary, 2015) and a lack of judicial knowledge regarding adjudicating disputes with alternative resolution methods (Alshahrani, 2017). When conflicts arise between parties, the most common path forward is to negotiate. Typically, an ad hoc committee is formed in which representatives of all parties meet to attempt to negotiate a solution. When this process fails, local courts are commonly tasked with resolving disputes.

Arbitration processes are also becoming common in the Kingdom. Legislation such as the Saudi Arbitration and Enforcement Law and the new Saudi Centre for Commercial Arbitration have played key roles in providing parties with alternatives in resolving disputes. The Saudi International Chamber of Commerce is the most frequently employed arbitration institution. The KSA has also retained its Sharia arbitration option, in which Sharia law regulates arbitration proceedings. This process has four elements (Al-Sabbali, n.d; Tieder, & Julian, 1992):

1. A dispute must be present.
2. All parties should consent to using arbitration for dispute resolution.
3. The arbitrator must be qualified.
4. Arbitrators must agree to conduct arbitration proceedings.

The KSA procurement law includes methods of dispute resolution. Under this law, ad hoc committees are formed to hear disputes, which can arise due to the following circumstances (Husein, 2014):

1. The contractor claims that a governmental body has breached the terms of a contract.
2. The government body claims that a contractor has breached the terms of a contract, executed these terms incorrectly, or engaged in ethical misconduct such as fraud, deceit, or manipulation.

After a ruling is made, parties are free to appeal within 60 days to the Saudi Board of Grievances. Litigation and arbitration procedures are both costly, time-consuming, and sensitive.

Negotiation and arbitration are becoming popular and are being employed more often among alternative dispute resolution methods (ADR). Generally, the mediation and conciliation options are selected only in legally binding cases.

Negotiation is a form of communication occurring between two parties in the initial stages of a conflict and is quite common in KSA. Arbitration is a process that involves a third party whose decision is binding for all parties involved.

5.5.7 KSA tendering and procurement law:

The KSA has a dual judicial system where administrative courts apply special legal principles to cases involving government contracts (Alanzi, 2021), also called administrative contracts (Hebous and Zimmermann 2021). This system maintains a separation between general and administrative bodies of law (Alanzi, 2021).

Administrative law governs Saudi government contracts. According to administrative contract theory (Alanzi, 2021), an administrative contract must meet all the following conditions:

1. One of the parties must be a public authority.
2. It must be related to public service.
3. It should be classified as an administrative contract.
4. It should be subject to the authority of the administrative judiciary in a dispute.
5. It must include conditions from public law.
6. It must include an “onerous” clause from public law.

KSA is moving toward its development goals by adopting procurement systems such as public–private partnerships (As Islam et al. 2017).

The Saudi Ministry of Finance administers the Government Tender and Procurement Law (GTPL), and its public procurement system runs the Unified Procurement Agency (UPA) as the government entity responsible for procurement. The GTPL is run by a digital auction system that selects bids and checks the qualifications and abilities of vendors to determine their eligibility in fulfilling government contracts (GTPL 2019, Article 1). Researchers have

suggested that the Kingdom should also adopt e-procurement procedures to improve its cost management and efficiency processes (Bahaddad et al., 2018).

The GTPL, issued in 2019 (GTPL No. M/128), listed the industry's procurement types as competitive, public, and specific (Alanzi, 2021). The former version of the GTPL focused on stringent legal obligations and limited the rights and duties of contractors on government projects. The new GTPL focuses on principles that foster improved approaches to fairness and equality, separation of personal and government interests, and promoting transparency. It also allows arbitration as an option for dispute resolution.

A government contract is defined as an agreement between either government institutions or government institutions and private vendors, and a contract between a government and a foreign participant is defined as an international administrative contract (IAC) (Hofmann et al. 2011). In such cases the foreign procurement should follow national regulations per Saudi law. Some exemptions are provided in exceptional circumstances (GTPL 2019, Article 11).

5.6 Characteristics of KSA industry impacting research:

A lot of issues in operational level impact the current research. Firstly, public bodies are not open to discussing their shortcomings. The public contracts that are being used in KSA need amendments, but this also needs support from the governing bodies.

The law that covers claims and the litigation process needs to be discussed at a level where international companies also feel being supported. It was important for current research to dig down a little deep into problems that are based at the foundation level of industry. The role of principles, the bureaucracy, the law and the system of procurement all need to be studied.

It is also important to understand the operative environment including the quality of the workforce, managerial skills and capacities, supply chains, technology usage and weather conditions, the procedures for authorities, approvals and permissions needed at all stages to commence the project. This is multi-layer of KSA specific aspects that need attention.

5.7 Summary:

The chapter highlights the special characteristics of the KSA construction sector, with the reliance upon foreign workers, the bureaucratic procedures involved in obtaining work permits and their renewal, and conflict between the political desires for Saudization and the reality that young KSA nationals are not attracted to working on construction sites. The KSA is a high-income economy, with significant investment plans for investment in construction projects. It

is likely to attract more international consulting and construction companies seeking opportunities to work on projects. The ease of doing business in the country was not easy, caused mainly by bureaucratic procedures.

The fragmentation of the KSA construction industry with the lack of large indigenous construction enterprises, coupled with the policies on Saudization is likely to lead to more joint venture agreements between international enterprises and KSA registered enterprises, which will require clarity of the contractual arrangements for public sector projects.

The chapter provides a background in understanding some of the causes of contractual claims. Contractors and supply chains must work within the constraints of the industry. International firms bring their culture, values, ethos, business practices and legal systems to the KSA. Sharia law means that there may be clashes of legal interpretation. Ethical responsibility is important to all the companies, they must comply with the governance of the KSA and their home country.

Reference is made to the importance of understanding Arab culture in every aspect of doing business, this will be explored further in the research.

CHAPTER 6: RESEARCH METHODOLOGY

6.1 Introduction:

The chapter will discuss the methodology that will be adopted to do the research. It will also reflect upon the theoretical paradigm of the research as well as what methods will be suitable to consider taking into view the basic purpose of the research.

The research follows the five-stage process described by Cooper (1998), and Pickering & Byrne (2013).

1. ***Problem formulation:*** Identify the problem area within the inefficient claim settlement process in the KSA.
2. ***Literature review:*** Identify the causes of contractual claims prevalent in KSA and the process used to settle construction disputes and conflicts. Analyse the inadequacies in the process to highlight problem areas and the research gap.
3. ***Data collection and evaluation:*** Undertake data collection on the current situation and the process involved in the settlement of contractual claims, by identifying the causes of contractual claims and the failure of the settlement process.
4. ***Analysis and interpretation:*** Identify the underlying issues prevalent in settling contractual claims in KSA. Consider the causal effects and how the interdependence increases the complexity of the system. Consideration of the solutions that are available for the KSA to make the process more efficient.
5. ***Discussion and presentation of results:*** Code of best practice developed and tested to improve the efficiency of contractual claim settlement in the KSA.

6.2 Research approach:

Research is defined as expanding the boundaries of ignorance by exploring and studying the "unknown" to discover new things (Goddard & Melville, 2004). The supporting methods and guidelines to frame the research is defined as a research methodology (Blessing & Chakrabarti, 2009).

Constructive research is systematically shaped around its outcome as a well-planned, organised, critical, controlled, empirical, data-based, scientific inquiry or investigation with a specific goal of achieving the outcome as an undiscoverable knowledge (Goddard & Melville, 2004; Sekaran, 2000; Kerlinger, 1986). Research methodology provides a systematic and

orderly work plan and a process to be used to structure the research (Kothari & Garg, 2014; Bist, 2014).

Key issues should be considered in the methodology, including what research questions to study, what data will be relevant, what data to collect, and how data will be analysed (Yin, 1994).

There are integrated methods where research philosophy, approach and technique are interrelated. (Kagioglou et al., 2008). The elements that constitute the methodology need to be recognised to align the research and the topic area.

Two frameworks for conducting research can be used as the methodology.

1. Nested model
2. Research onion

The nested model was introduced by Kagioglou et al. (1998) using three elements to establish the research methodology: research philosophy, research approach, research techniques as shown in Figure 6-1

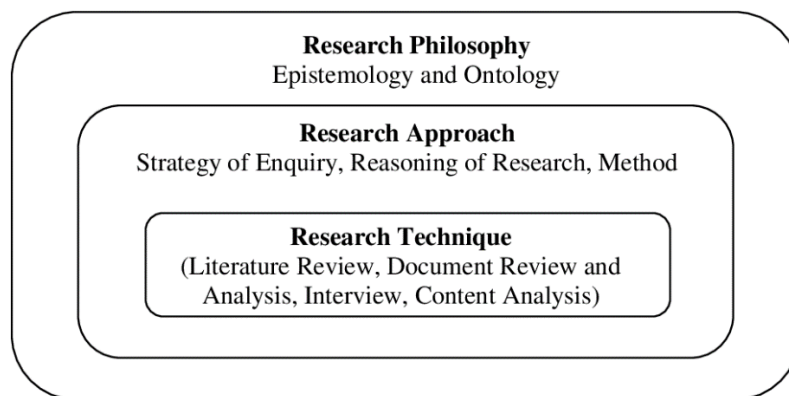


Figure 6-1 Nested research methodology. Adopted from Kagioglou et al., 2008

The research onion model shown in Figure 6-2, introduced by Saunders, Lewis and Thornhill (2016), uses six steps to establish the research methodology: research philosophy, research approach, research strategy, research choices, data collection methods, and timescale.

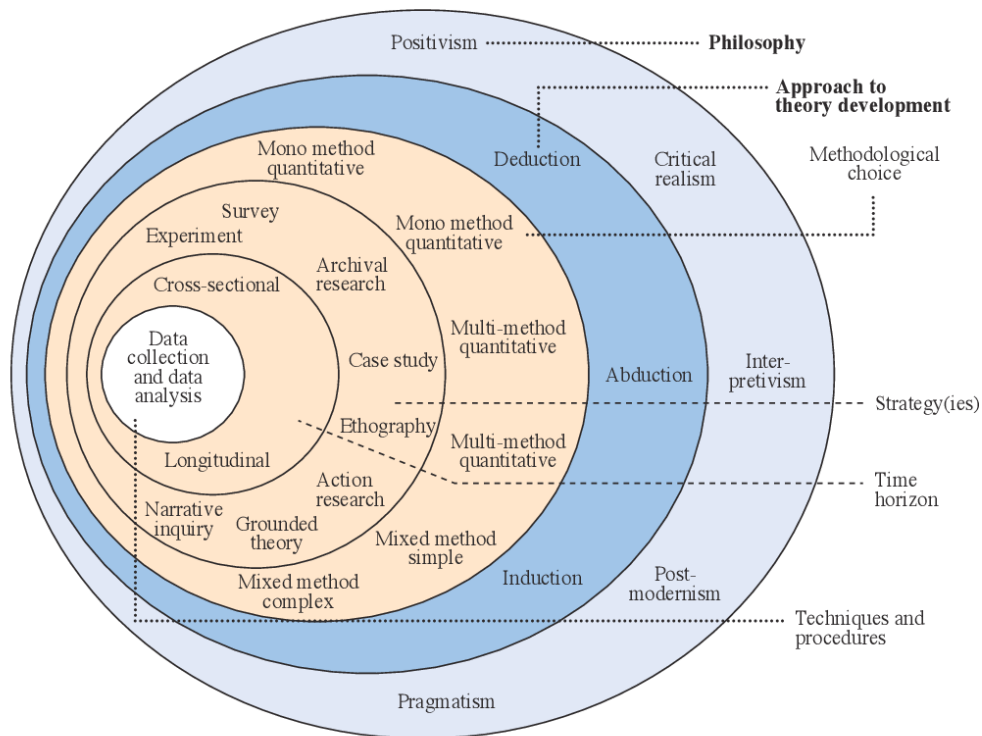


Figure 6-2 The Research Onion Model (adopted from Lewis et al., 2012)

Three areas are common in both approaches, research philosophy, research approach and research technique.

The research onion model (Saunders et al., 2009) will be followed in the research to understand the steps and options. It is a more relevant approach to structuring the framework because it suggests options for collecting data.

6.3 Research Philosophy:

Philosophy is an overarching term that encapsulates the development of knowledge and the nature of the knowledge being developed (Saunders et al., 2016). An important element is the assumption that it is born out of a product of intellectual activity, knowledge, and insight of the researcher (Hitchcock & Hughes, 1995).

It is important to consider the research design and the purpose it wants to achieve, along with available resources and the questions being investigated. (Tzortzopoulos, 2004).

There are two kinds of research, pure, and applied (Fellows and Liu, 2003; Creswell, 2013), Pure research, also referred to as blue-sky, basic, and fundamental research, develops fundamental understanding and knowledge and contributes to the body of theory. Pure, is conducted without a specific goal in mind, whereas applied research is carried out with the

goal of solving a problem or answering a specific question. Applied research addresses issues of application, the research aims to solve practical problems. This research involves applied research.

There are three main perspectives to classify research philosophies: ontology, epistemology, and axiology (Sexton, 2003).

a) **Ontology** is when the researcher seeks answers to questions like "how does the world operate" or "how does society construct and influences its surroundings," it is categorised as ontological research. It is concerned with the logical investigation of different ways in which things exist and the nature of various kinds of existence (Silverman, 1998; Yearworth and White, 2013). It helps to differentiate between reality, the perception of reality, and how it affects people's behaviour. Ontological research usually uses quantitative and experimental methods to test hypothetical-deductive generalisations (Blaikie, 1993; Treiman, 2014).

Within ontological philosophy, there are two philosophical positions: Objectivism and Idealism (subjectivism) (Phillimore & Goodson, 2004).

Objectivism (realism) assumes that the external worlds do not have a structure or a predefined/pre-determined nature.

Subjectivism (idealism) is defined as an unknowable reality that individuals can notice.

Philosophical positioning of this research: Ontology idealism /subjectivism is most relevant to this research, as the way to handle disputes is subjective depending on the contextual factors (environment and the ways adopted to settle conflicts). The process involves different actors, including client, contractor, client representative, and other stakeholders, including subcontractors, suppliers, or experts in dispute resolution. Human perceptions, attitudes, behaviours, decision-making, and adopted procedure can "collectively socially construct" the process of settling claims. The research aim of analysing different codes of best practice to make the process of settlement more efficient, sits on the subjectivism continuum in the ontological perspective.

b) **Epistemology** is based on reasoning, which is the method for acquiring knowledge; it aims to prove something beyond reasonable doubt. It addresses the facts and deals with questions of knowledge acceptability in discipline and methods. (Bryman, 2012). The research defines what acceptable knowledge is, and what information is known to be true from testing and being proved as a fact, along with describing and competing different inquiry paradigms and debating

the best way forward. The philosophical positions include positivism, critical realism, postmodernism, pragmatism and interpretivism (social constructionism) (Norris, 2005; Easterby-Smith et al., 2012).

Under *positivism*, the basic assumption is the objectivity of the reality and alienation of the social world as an external factor; the research subject is considered independent of the researcher (Easterby-Smith et al., 2008). The phenomenon is measured by using objective methods. Positivism generates hypotheses (or research questions) that can be tested and produce quantifiable results that other researchers can replicate to produce the same result. It undertakes quantitative scientific methods to perform. Post-positivist researchers follow a series of logically related steps to explore the phenomenon under study and present the knowledge outcome based on deductive reasoning and control, objectivity, and standardisation.

The management of construction projects is influenced by lot of external factors, mainly the unstable nature of many projects' environments, meaning there has to be a shift from positivist towards interpretative paradigm that identifies the dynamic nature of the project. Hence, a pure positivist approach would not be sufficient in the current research.

Social constructivism (interpretivism) emphasises subjective consciousness (such as intuition, sensation, and reflection) and establishes reality through people and not through external factors or objectives. It implies that the subjectivity of the individual within a group is important implying that the phenomenon is observed through the context and value laden approach by the individuals. An interpretivist researcher believes to observe the world through the eyes of the people which are studied, with multiple outlooks of reality, instead of single reality of positivism.

The context of culture and the intercommunication amongst the people inhabiting that culture broadly affects the individual's analysis of the phenomenon (Scotland, 2012). The reality is neither external nor objective; rather, it has a social construct.

Interpretivism deals with people's participation and the importance of social and cultural life, which exist and give meaning to their actions. It uses humanistic qualitative methods where the researcher relies on participants' views and develops subjective meanings of the phenomena under study. It is shaped from the bottom by individual perspective, moving to form broader patterns at the top that leads to expanded understanding (Creswell & Clark, 2011). Positivism and constructivism are anchored on the opposite ends of the paradigm continuum (Betzner 2008).

Realism can be matched with positivism based on processes and unbiased results due to researcher and social reality autonomy. The main difference between positivism and realism is that positivism is the philosophical theory that claims that whatever exists can be verified through observation, experiments, and mathematical/logical evidence, whereas realism is the philosophical view that claims that the external world exists independent of the conceptual scheme or perceptions. No scientific method is perfect, and every theory needs to be revised and undergo continuous exploration.

Pragmatism is another philosophical positioning. Pragmatist epistemology assumes that a person's social experience constructs one's perception about the world and is the basis of their knowledge. That makes each person's knowledge unique as their experiences are different.

It is positioned as a philosophical approach that bridges the gap between the older approaches of the scientific method and structuralist orientation, and newer approaches of naturalistic methods and freewheeling orientation (Creswell, 2013; Creswell and Clark, 2011). It embraces the plurality of the methods as it proposes utilising the philosophical or methodological approach that works best for research problems (Tashakkori & Teddlie, 1998; Maxcy, 2003). It is associated with mixed methods or multiple methods where the focus is primarily on the final interpretations/outcome of research rather than the methods employed. Scholars of pragmatism believe that reality cannot be assessed solely by using a single scientific method (Biesta 2010; Creswell and Clark, 2011; Johnson and Onwuegbuzie, 2004; Maxcy, 2003; Morgan, 2014; Teddlie and Tashakkori, 2009).

Philosophical positioning of the research with respect to epistemology: Interpretivist (social constructivism) defines most appropriately the epistemological, philosophical assumptions of this study. A small sample is taken to investigate the experts' perspectives and views through interactions that constitute the social construct, to propose better practices for claim settlement in KSA. This provides rich data that reflects upon ideas and human interests in the system. The data collection approach uses face-to-face semi-structured interviews to provide interpretive meaning to the process and its subsequent parts. It leads the participants to express more openly their opinions about the process and the weakness of the settlement process. Table 6-1 shows a comparison of the three approaches.

Epistemology	Positivism	Social Constructionism (Interpretivism)
The observer	Must be independent	It is part of what is being observed

Human interest	Should be irrelevant	Are the main drivers of the science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progress through	Hypotheses and deduction	Gathering rich data from which ideas are induced
Concepts	They need to be operationalised so that they can be measured	Should incorporate stakeholder perspectives
Units of analysis	It should be reduced to the simplest terms	May include the complexity of the 'whole' situation
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons
Methods used	Experiments, surveys, case studies, simulation, modelling	Case study, ethnography, action research

Table 6-1 Adopted from Easterby-Smith et al., 2003

c) **Axiology** is when research understands the role of opinions and values in collecting and analysing the research.

This regards the value that the researcher appends to the knowledge body to be a part of the process. (Creswell, 2009; Saunders et al., 2016). There are "value-free" and "value-laden" studies. In value-free studies, the topic and methods are dependent on the aim, but in value-laden studies, the values, beliefs, and experience of human dictates the topic as well as the method of the study (Easterby-Smith, 2012)

Philosophical positioning of present research with respect to axiology: This research focuses on the experience, opinions, beliefs, and perceptions of experts related to claim settlement in KSA construction projects. The value-laden side is more identified to the axiology philosophy positioning of the research. The expert involved in the process has participated and significantly impacted the exploration and development of the code of practice for claim settlement in the KSA. Figure 6-3 shows the approach of this research across the various assumptions.

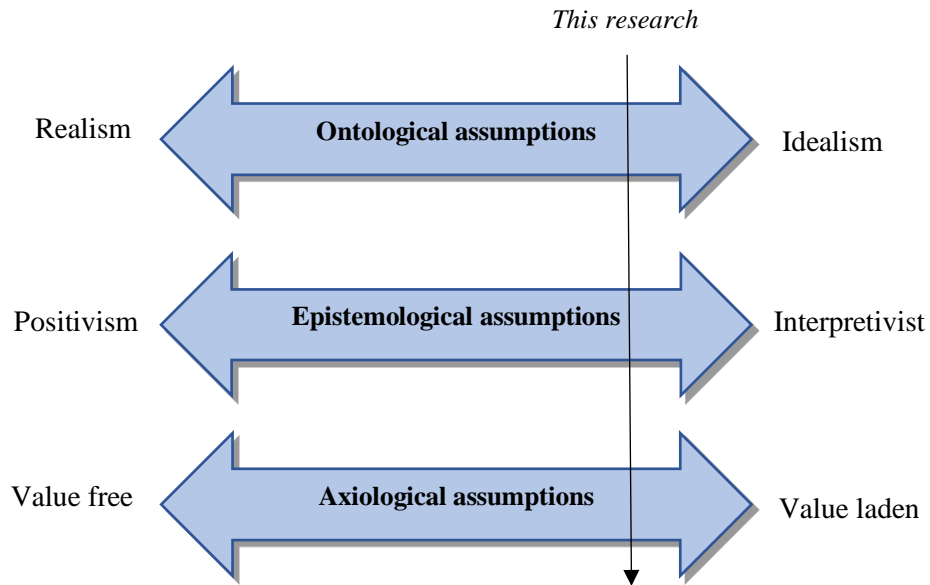


Figure 6-3 Philosophical positioning of the research

6.4 Research approach:

After defining the philosophical position, the researcher should align their approach. This relates to theory development and answering the questions, and meeting the objective(s) of the study (Saunders et al., 2016)

Research Approach (Research paradigm) is a way to understand and form theoretical explanations of the phenomenon. The collective set of attitudes, values, beliefs, procedures, and techniques create a framework to facilitate this process (Trochim & Donnelly, 2006). There are three different research approaches, deduction, induction, and abduction (Lewis et al., 2012) – see Figure 6-4

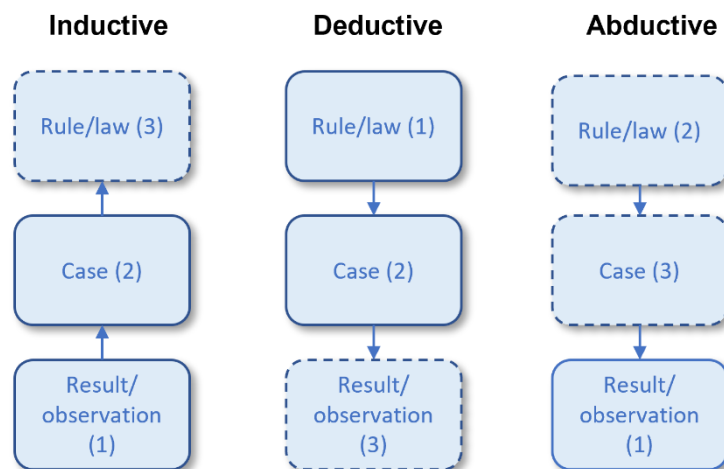


Figure 6-4 Deductive, Inductive and Abductive approach (adopted from Fischer 2001)

In **inductive research**, the aim of a researcher is to conclude theoretical ideas and outlines from observed information, whereas in deductive research, the aim is to analyse ideas and patterns identified from theory through new experimental data. A deduction is the procedure of illustrating conclusions about an occurrence or behaviour which is based on theoretical or logical reasons whereas induction is the method of illustrating conclusions on the basis of facts or observed proof. The inductive approach is taken when a researcher is trying to build a theory. It moves from the research question to observations and descriptions to analyse and then produce a theory. Thus, the inductive approach moves from data analysis to theory formation (Lewis et al., 2012). The research process is focused on the perception of human beings and the interpretation of the social world (interpretive process), leading the process to decide upon the research purpose; either undertaking a qualitative or a quantitative approach (Lewis et al., 2012; Saunders et al., 2016).

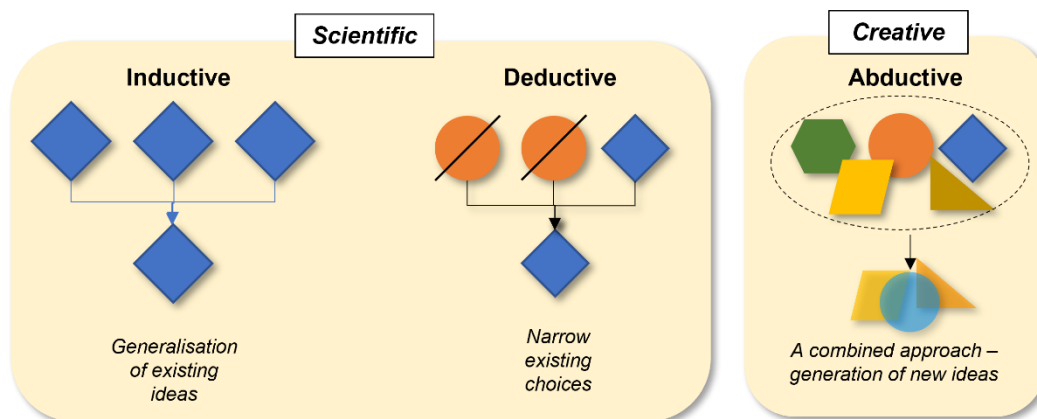


Figure 6-5 Defining the inductive, deductive, and abductive methods of reasoning

The **deductive approach** starts with a statement or question and seeks an answer to it. It moves from theory to question, then to data collection and findings to reject or affirm the research question. This will be followed by a revision of the theory and restarting the process. In this way, the cycle continues. The deductive approach starts with the theory to the formation of hypothesis (single or many) to be tested, moving to test and finally to confirmation or to modify the theory according to the outcomes (Lewis et al., 2012; Saunders et al., 2016).

The **abductive approach** is the combination of deduction and induction (Lewis et al., 2012). Figure 6-4, Figure 6-5 and Figure 6-6 shows a comparison of the three approaches.

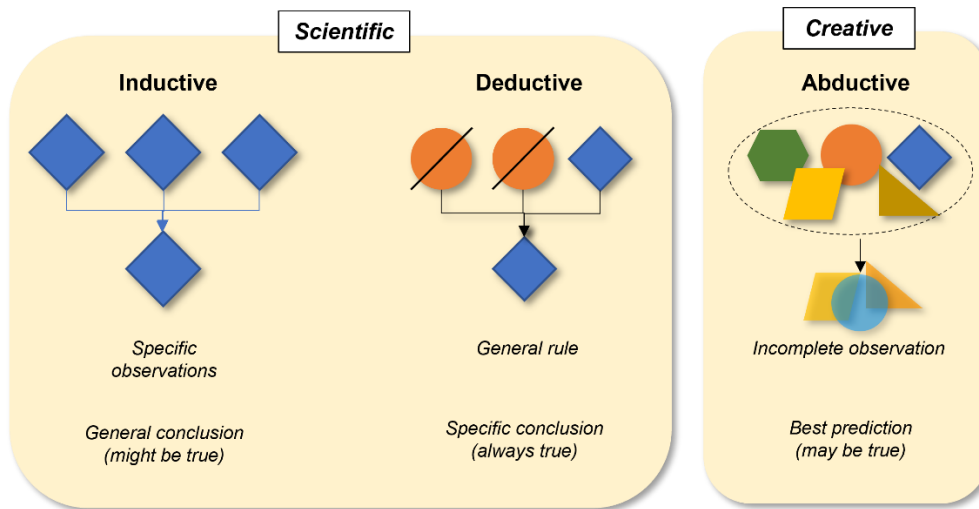


Figure 6-6 Defining the inductive, deductive, and abductive methods of reasoning

Research approach most suitable for the present research: The abduction approach is most suitable for the research; it is based on the generation of new ideas for developing a framework for a code of best practice to mitigate the claim settlement process in KSA. The process starts with observing the problem and reviewing the secondary data to identify the key problem areas. Data acquisition and analysis starts from the theory available to collate and correlate the events. It will be used to design the data collection methods.

The framework will be developed from the data analysis and populated with the data relevant to possible improvement measures in identified areas.

The abduction approach helps to build an understanding of the contextual element of the events. It increases the possibility of obtaining broader knowledge in relation to participants and their relationships within the claims context and explore the claim settlement process with reference to KSA.

6.5 Methodological choices:

There are two main methodological research choices: mono method and multiple methods see Figure 6-7.

The mono method: a single data collection technique and its corresponding data analysis procedures. The multiple methods: uses more than one data collection technique and corresponding analysis procedure adopted to seek answers to the research questions. Multiple methods are further developed into mixed-method and multi-method studies.

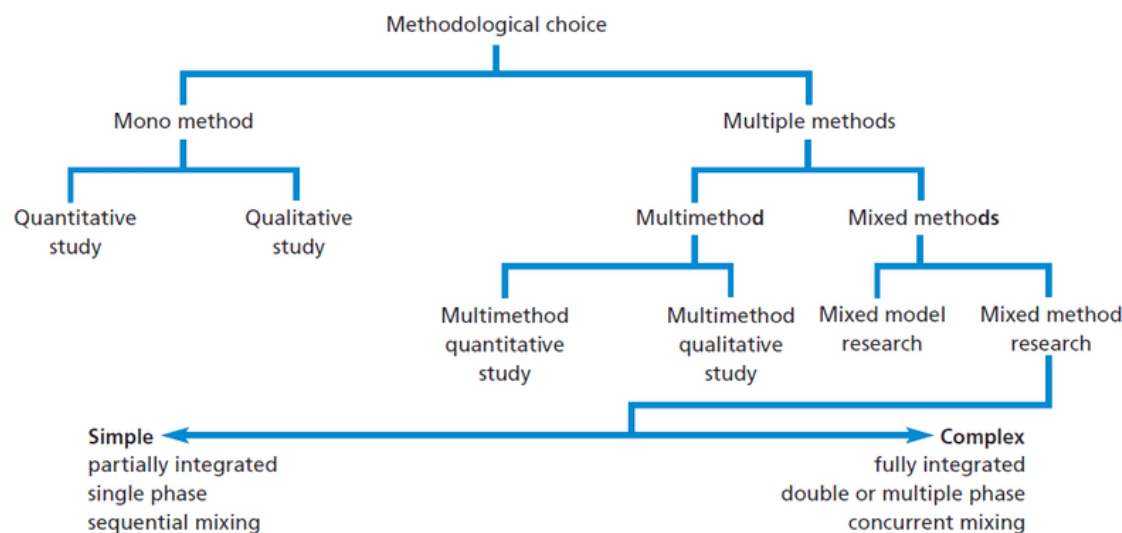


Figure 6-7 Research Choices (Adapted from Saunders et al., 2016, p. 152)

- i. **Mixed-methods:** Qualitative and quantitative data collection techniques are used along with analysing procedures in one research design.
- ii. **Multi-methods:** More than one method is used, either qualitative or quantitative methods for data collection and analysis in accordance with their relevant procedures.

The research method choice most suitable for this research is a mixed methodology (methodological research choice). It is time-consuming but provides for comprehensive data collection. It blends both qualitative and quantitative methods that complement one another (Creswell, 2007) and helps collect different types of information effectively.

Qualitative or quantitative techniques used individually or in isolation might create bias. (Onwuegbuzie & Teddlie, 2003; Bryman, 2012; Creswell, 2009). However, by using different methods, the weaknesses of any one method can be 'offset' by the strengths of another method and prove to be a more beneficial approach to collect data.

The mixed methodology provides a more extensive reflection of the entities involved in research and combines multiple observers, theoretical perspectives, and methodologies used interchangeably (Creswell, 2013). The most obvious reason to choose this methodology is to have a more comprehensive understanding of the research problem. Also, this way, the limitations of one method is set off by the other to fill in the gaps in knowledge or observation.

Qualitative data is generally described as open-ended, rich data with no set or pre-determined answers. It is opinion based and can reflect different perspectives when answering a question.

Quantitative data is more structured that focuses on the quantitative measurements.

A qualitative approach often supplements an investigative process where the researcher aims to make sense of the social phenomenon to contrast, compare, replicate, catalogue, and classify the object of study to make sense of the social phenomenon. (Amaratunga et al., 2002). Quantitative approaches' main strength is their precision and control. (Myers, 1997; Merriam and Tisdell, 2015).

The causal relationship within the system increases the complexity of the claim settlement procedure. An in-depth understanding will be obtained from mixed methods using both qualitative and quantitative approaches. The exploratory design enables the collection and analysis of qualitative data that leads to the quantitative approach.

The exploratory research design is used to prepare a specific open-ended questionnaire to be adapted for face-to-face semi-structured interviews. It will help in collecting data relevant to understanding conflict and claim settlement procedures employed in KSA by experts. It contributes significantly to the identification of possible variables populating the framework of the code of best practice.

6.6 Research strategy:

Choosing a research strategy depends on many factors, including the type of research questions posed, the objectives to be achieved, the amount of time available, existing knowledge, the extent of control an investigator has over actual behavioural events, the degree of focus on present (contemporary) and the philosophical underpinnings (Naoum, 2007; Yin, 2014). Each of the strategies have their advantages and disadvantages (Yin, 1994).

Yin (2003, 2014) suggested five different research strategies.

1. Survey.
2. Experiment.
3. Archival analysis.
4. History.
5. Case study.

Others suggest a different list (Easterby-Smith et al., 2008; Remenyi, 1998):

1. Experiment.
2. Survey.
3. Case study.

4. Action research.
5. Ethnography

Experimental design is rigid and collects data for statistical analysis by separating the context and phenomenon (Yin, 2014). Mostly conducted in the laboratory, it includes control group studies where two groups are studied. One group is tested for some casual effects due to some phenomenon by observing the effect of the dependent variable by controlling the independent variable, while the other is not.

The survey is associated with the deductive approach (Lewis et al., 2012). This is because it helps collect large amounts of data to address the questions of who, what, where, when and how. Neither survey nor experiment are suitable for this research, as its philosophical stance leans towards an interpretive and subjective approach with value-laden insight.

Action research strategy looks for issues and finding solutions. The process follows clear objectives followed by the diagnosis of the problem and then generates a list of actions to solve the problems (Somekh, 2006). It is an iterative process with a continuous cycle of planning, diagnosing, taking action, and evaluating (Saunders et al., 2016). This provides an in-depth understanding of a specific phenomenon, but the strategy is inappropriate for this research due to limited access and intervention of participative inclusion.

Ethnography study requires the researcher to be a part of the community or situation being researched and then observe and document actions (Crang & Cook, 2007). It is a time-consuming approach that takes place over an extended period and would be difficult to adopt for this research due to the time constraints. For the researcher to immerse themselves into the actual environment of a range of construction projects which may be undertaken over many years, and to gain a deep understanding of the intricacies would take time and involve having access to confidential and commercially sensitive information.

The case study approach involves studying one or more individuals or cases/events in a real-life context (Gerring, 2007; Yin, 2014). Researchers can examine the studied phenomena or the real-life situation and gain an in-depth picture of the relationships and processes within the phenomenon, making it a more common choice in qualitative studies compared to quantitative studies (Denscombe, 2010). The case study strategy is the most suitable option for this research as it can help to address the research questions in better ways.

A case study approach can deal with a wide variety of evidence, including documents, artefacts, interviews, questionnaires, and observations (Yin, 2014, p. 11). Different data collection methods can be adopted including combinations of both quantitative (questionnaires) and qualitative (interviews and documents) data.

6.7 Time horizon:

The selection of a time horizons in research is an important consideration (Lewis et al, 2012).

Cross-sectional: Research to investigate a particular phenomenon at a particular time.

Longitudinal: Research that investigates a particular phenomenon, the changes and developments over time'

The time horizon most suitable for this research is cross-sectional due to the limited time available.

6.8 Research Techniques:

Research techniques are related to data collection and the procedures adopted for their analysis. The nature of the research topic creates challenge for data collection. Contractual claims are considered to be confidential and sensitive, data and information is not published or put in the public domain, unless the claim involves litigation through the courts. Even at the judgement stage, detailed and supporting documents will not be published. The nature of the data must be considered when structuring the collection of data for the research.

The two main categories of data are *primary data* collected by the researcher and *secondary data* obtained from the existing sources, such as publications, and information in the public domain (Walliman, 2006).

6.9 Data collection method:

Research techniques to collect data include literature review, interviews, questionnaire surveys, experiments, focus groups, observation, study, and workshops. This research will use both primary and secondary data.

The primary data consist of the available information regarding claim settlement procedures in KSA. While the secondary data relevant to the study area will be collected from sources prepared to divulge the data.

The literature review examined the impact of claims, the causes of disputes or conflicts, the underlying causes of claims, the method of dispute resolution, methods of claim settlement employed in KSA, the issues and weaknesses within the claim settlement procedure adopted in KSA and the barriers in attaining better procedures to claim settlement in KSA.

The next step was semi-structured interviews based on the knowledge and data gathered. Qualitative data was collected through semi-structured interviews conducted with experts from KSA construction projects. This was used to formulate the framework structure for developing the code of best practice. A second survey questionnaire was forwarded to the same experts to collect the data to populate the framework. The data collected was used to validate the information on the claim causes, disputes, claim settlement, barriers in the process and the needed improvements.

6.9.1 Literature Review:

The literature review consisted of secondary data and included scientific papers, articles, magazines, journals, theses, Internet sites and industrial reports.

Relevant information was gathered regarding occurrences of claims, impact of claims, the causes of such disputes, conflicts and claims, the method of dispute resolution and claim settlement employed in KSA, the issues and weakness within the claim settlement procedure adopted in KSA and the barriers in attaining better procedures to claim settlement in KSA.

6.9.2 Qualitative data collection:

The semi-structured interview was conducted as first step. It was designed as face-to-face interviews with experts and practitioners in KSA construction projects to explore the issues. A pilot study was undertaken with a small sample of respondents to validate the design of the interview questionnaire before forwarding it to the survey respondents. The interview questionnaire was corrected and amended considering suggestions and the final version sent out.

6.9.2.1 Interview sample:

Sampling helps to select participants for the research study and reduce the number of people required to be interviewed or to complete a questionnaire. Various sampling techniques are possible, but snowballing was selected for the present research (Oppenheim, 1992). Snowball sampling or chain-referral sampling is a non-probability sampling technique. It is useful when the interest group is difficult to find, or the inclusion traits are rare or very specific to find.

(Kogan, Wejnert, Chen, Brody, & Slater, 2011). Appropriate companies operating in the KSA were identified based upon their annual revenue, experience of working on public sector projects, and their registration status. They were contacted to ask for practitioners who would be prepared take part in the research.

Face-to-face interviews were conducted with 15 selected practitioners and experts working on KSA construction projects. Companies working in KSA were shortlisted and the highest-ranked companies were selected. A request was sent to each company asking for experienced professionals who could participate and help in the research process. The names sent by the companies were then contacted and briefed about the research process. The sample size was influenced by the impact of Covid-19 on the KSA construction sector. Despite initial promises to be interviewed, the pressure of coping with Covid-19 meant many participants withdrew or did not respond to the requests.

To ensure the anonymity of respondents, each interviewee was allocated a unique code. All participants were registered and authorised by the Saudi Council of Engineers (SCE) and the Ministry of Justice.

The time allocated to each interview was about 40 minutes. The interviews were conducted through face-to-face meetings or through Skype meetings. After the interview scheduling, a confirmation email was sent to brief them about the interview date, process, and structure of the interview. Every interviewee was briefed about the purpose of the research and the interview protocol.

The interview was structured with pre-determined open-ended questions. The interviews were recorded. The questions were asked in the same order and pattern for all respondents. The interview consisted of 17 questions divided into four sections.

The qualitative data question for interviews (semi-structured) was designed as follows (Appendix 1):

Section One: Impact of contractual claims on cost and time reimbursements (Five questions)

Section two: Causes of claims in KSA construction projects (Five questions)

Section Three: Claim resolution methods employed in KSA construction projects (Four questions)

Section four: Alternative dispute resolution (ADR) in KSA construction Projects (Three questions)

There was an opportunity at the end of each interview to give a wider perspective and personal experiences.

6.9.3 Quantitative data collection:

The survey questionnaire was conducted to collect quantitative data.

6.9.3.1 Survey questionnaire sample:

The second round of survey questionnaires was designed as open-ended questions and conducted with the same 15 practitioners and the same anonymity.

6.9.3.2 Survey questionnaire method:

The questionnaire was sent to the respondents through email. The average time allocated to each respondent was two weeks to complete and return the survey.

Each participant was emailed to brief them about the research's second step and the importance of the survey questionnaire.

The second questionnaire survey was structured to gain understanding and deeper knowledge regarding the "needed improvements "in KSA about claim settlement procedure, according to the problems identified in the first interviews (qualitative data) in the whole construction process starting with the pre-construction phase.

The survey was accompanied by a letter of introduction and the first page of the survey thanked the participants for their time and briefed them about the purpose of the research.

This was followed by explaining the survey structure and the type of questions that would be asked. Section one collected the respondents' general information, including their education, professional experience, and years of experience.

The survey was structured with pre-determined close-ended questions. In addition, it used rank order questions and Likert scale questions.

The rank order questions had options that the respondents ranked (close-ended questions).

The Likert scale questions asked respondents to rank on a scale of five from most important to least important.

The survey consisted of 58 questions in total and was divided into four sections, designed as follows (Appendix 2):

Section One: General information regarding respondents. (Eight questions).

Section two: Claims in KSA construction projects (Twenty questions).

This section was divided into three parts:

Part I: Claims in KSA (One question).

Part II: Effect of claims on KSA construction projects about time, cost, and quality: (One question).

Part III: The reasons for claims in construction projects in KSA: (Eighteen questions)

Section Three: Claim settlement procedure in KSA (Two questions).

The section was divided into two parts

Part I: Method of claims resolution in Saudi construction projects (One question divided into four parts). Part II: Resolution method classified according to important factors in the projects (One question divided into seven parts).

Section Four: Recommendations regarding claim resolution process in the industry (Twenty-eight questions).

Respondents provided answers as per their professional knowledge about the suggestions and recommendations that seem appropriate to be implemented in KSA.

6.10 Data Analysis:

Priority at the first stage was given to qualitative methods (Anfara et al., 2002) and can generate a good understanding of a claim settlement process.

Crowther and Lancaster (2012) highlighted six ways to interpret the qualitative data and perform data analysis.

1. Argument analysis,
2. Conversation analysis,
3. Narrative analysis,
4. Discourse analysis,
5. Grounded analysis

6. Content analysis

6.10.1 Analysis of interviews:

Thematic analysis was selected as an analysis technique, the benefit of the technique is that it can result in theory-driven or data-driven findings (Braun & Clarke, 2006).

The following steps were performed

1. **Data Preparation:** Data was prepared and organised for analysis.
2. **Transcribing the data:** Verbatim transcripts were used to serve as an accurate record of the conversation by capturing every comment.
3. **Familiarise with data:** The data was reviewed for consistency and reliability.
4. **Memoing the data:** Memos are "conversations with ourselves about our data" (Clarke, 2005, p. 202). Notes and comments were taken by the interviewee. Remarks were made to identify potential biases that could arise.
5. **Coding the data:** Data transcripts were coded into smaller and shorter words (Coyne and Cowley, 2006). Colour coding was performed to facilitate summarising the content into specific manual themes and codes. The colour coding helped to place data analysis content into identified patterns. Each section had its own set of patterns relevant to the data collected. The longer scripts were then coded into smaller, meaningful, and descriptive words. Short, descriptive words or phrases were assigned to give meaning to the data.
6. **Transformation of codes to categories and categories to themes:** The researcher undertook an inductive analysis to find patterns, categories, and themes of analysis from data. The 18 codes were categorised into 8 categories to gather related ideas. After categorisation, 5 themes were produced by bringing together various related categories, names were assigned to the themes to represent the descriptive element of the content.

The most important step was then to establish categories relevant to problems in the claim settlement procedure in KSA construction projects. This would help analyse problem areas and needed improvement areas to structure the framework for the code of best practice. The structure of the framework needs to be populated with the measures identified in the quantitative data analysis (the second research method adopted).

6.10.2 Quantitative data analysis:

The research design targeted experts working in the KSA construction sector, a mixed methodology was adopted. The data analysis process required different techniques to perform the required task (Edmonds and Kennedy, 2012).

The analysis of qualitative data focused on identifying the problem areas, underlying causes and issues and gaps in the present system employed in KSA that need to be improved.

A framework was structured based on the first set of qualitative data analyses. The second technique (quantitative data) was focused on characterising the recommendations to achieve those needed improvements.

To develop a framework to mitigate the claim settlement procedure in KSA, it is necessary to analyse the quantitative data to rank the recommendations that could be implemented. A descriptive analysis was undertaken to characterise the collected data based on frequency and the rank given to each factor. The following steps were performed:

1. **Coding:** The collected data were coded according to their ranking.
2. **Data Entry:** The data were entered into an excel file for quick calculations.
3. **Frequency Calculation:** The frequencies of each ranked option were calculated to measure the rank provided to each option by all respondents. Similarly, to calculate which option was ranked 1st by most of the respondents and vice versa.
4. **Overall rank of options:** The overall rank of options was calculated in rank order questions. Depending on a number of an option presented to be ranked, the rank code was adjusted. For example, where 6 options were ranked, then code of rank one is 6, rank 2 is five and so on). Then, the rank codes were multiplied by the frequency of that rank. This was repeated for all ranked options and added together to calculate the overall rank score of the option. The overall score (weightage) helped in ranking the options.

$$\text{Overall Weightage} = \sum w = T * N_1 + (T-1) * N_2 + (T-2) * N_3 + \dots (T - (T-1)) * N_T.$$

Where w is the weightage given to each factor by respondents.

T = No of options = Highest weight.

Rank given to each option ranging from 1 to T .

Where 1 is the highest rank and T is the lowest rank (dependent on number of options given to respondents, for example if 7 options given then $T = 7$)

N_1 = number of respondents for rank 1 to the option,

N_2 = number of respondents for rank 2 to the option,

To

N_T = number of respondents given rank T to the option.

5. **Relative importance index:** The relative importance index was calculated for the Likert scale data. This was further used to rank the options in order of their preference to be considered for implementation (including ease of implementation) in KSA.

$$\text{Relative Importance Index} = \frac{\sum w}{AN} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

Where w is the weighting given to each factor by the respondent, ranging from 1 to 5. For example, n_1 = number of respondents for Little Important, n_2 = number of respondents for Some Important, n_3 = number of respondents for Quite Important, n_4 = number of respondents for Important, n_5 = number of respondents for Very Important). A is the highest weight (i.e. 5 in the study) and N is the total number of respondents. The relative importance index ranges from 0 to 1 (Tam and Le, 2006).

6. **Categorisation of recommendation:** The highly ranked (top three) recommendations were categorised in groups. This highlighted broader categories to reflect upon “needed improvements” areas. This will help in designing and presenting measures to achieve the improvement in that category
7. **Designing measures:** The top three recommendations were used to design measures to achieve the needed improvements. Measures (identified in the literature review) were preventative (avoidance strategy) and corrective (management strategy).

6.11 Data validity and reliability:

Credibility, validity, and reliability are crucial elements for qualitative research as manipulation and presence of bias are greater (Creswell, 2013). To increase the credibility and validity of the analyses and interpretations, an independent review was undertaken.

Triangulation of data from a range of sources or gathered from a range of research methods such as informal and formal interviewing, Survey questionnaires and documents build up the validity of the analyses and interpretations (Watson-Gegeo, 1988).

The adoption of the triangulation method mitigates the limitation of the interview in the form of biases and manipulation. In the context of the present research, a mixed-method methodology was adopted. The biggest advantage of using this methodology is that the limitations of one research method can be easily mitigated by the advantages of the others. The data was collected through semi-structured interviews, as well as survey questionnaires.

6.12 Ethical considerations:

A number of ethical issues will be considered when conducting the research. First, participants will be informed about the purpose of the study and what their involvement would entail. Second, information about participants will remain confidential, and their identities anonymised. Data will be stored on a password-protected computer, and only the researcher will have access to the data. Furthermore, identifiable data will be kept for five years, after which time it will be destroyed, while anonymised data will be kept for seven years.

Data may be used for future analysis and shared for research or training purposes, but participants will not be identified individually. Participants will be provided contact information at the University of Reading Ethics Committee in case they have any complaints about the study. Participants will have the right to withdraw from the study within two weeks after data has been collected. Participation in the study will be voluntarily, and respect for all participants will be prioritised. Before participants take part in the study, they will be asked to sign a consent form agreeing to the above-mentioned ethical considerations.

6.13 Respondents' overview:

A request was made to provide professionals who have experience in KSA construction sector and willing be a part of the research. Amongst the 15 respondents 14 (93%) primarily work in KSA, while one (7%) of the respondents does not primarily work in KSA (has work experience is in Egypt).

The respondents have been working in the construction industry and have experience of well over 10 years. 7 (47%) out of 15 of the respondents have 11-20 years of experience. While 3 (20%) have 21-30 years of experience and 5 (33%) have spent more than 30 years in the Saudi construction industry (Table 6-2).

The details of respondent's classification according to the Saudi Council of Engineering is shown in Table 6-3.

Table 6-4 shows the summary of professional certification and licenses held by the respondents.

<i>Experience (Years)</i>	<i>Total Responses</i>
11 to 15 years	1 (7%)
16 to 20 years	6 (40%)
21 to 30 years	3 (20%)
Over 30 years	5 (33%)
Total	15

Table 6-2 Experience of respondents in years

<i>The Saudi Council of Engineers' classification</i>	<i>No of Responses</i>
Engineer	2 (13%)
Certified professional	8 (53%)
Consultant	5 (33%)
Total	15 (100%)

Table 6-3 Saudi Council of Engineering's classification of respondents

<i>Professional certifications or licenses</i>	<i>No of responses</i>
Master in Construction Management	6 (40%)
MCIQB	8 (53%)
PMP	8 (53%)

PMOC	6 (40%)
MCInst.CES	5 (33%)

Table 6-4 Professional certification or licenses of respondents

The respondents are currently designated at senior managerial level posts. Table 6-5 shows the summary of the present designations of the participants.

<i>Designation</i>	<i>No of responses</i>
Consultant	2 (13%)
Contract manager	2 (13%)
Head of Civil/structural Department	1 (7%)
Vice President	2 (13%)
Director Contracts and claims	1 (7%)
Manager Civil/structural Department	1 (7%)
Senior Quantity Surveyor	1 (7%)
Project Manager	5 (33%)
Total	15

Table 6-5 Present designation of the respondents

The roles and responsibilities that are being conducted by participants at their current posts include Technical consultation, Contract Management (2) Structural engineering (3), construction and maintenance management (4), Project Management (4), Costing & Planning controls (1) and Quality Supervision (1). Table 6-6 shows the summary of participant's current jobs and their associated responsibilities.

<i>Respondents' designation and associated role and responsibilities in current job placements</i>	<i>No of Respondents</i>
Consultant	2
Technical consultation	2
Contract manager	2
Contract Management	2
Director Contracts and claims	1
Contract Management	1
Head of Civil/structural Department	1

Structural engineering, construction, and maintenance management	1
Manager Civil/structural Department	1
Structural engineering, construction, and maintenance management	1
Project Manager	5
Project Management	3
Structural engineering, construction, and maintenance management	2
Senior Quality Surveyor	1
Quality Supervision	1
Vice President	2
Costing & Planning controls	1
Project Management	1
Grand Total	15

Table 6-6 Summary of present designation and roles and responsibilities

The details about job posts previously held by participants are summarised in Table 6-7.

Job roles in projects undertaken	No of Responses
Project Manager	9 (60%)
Design Manager	5 (33%)
Site Manager	2 (13%)
Construction Manger	5 (33%)
Consultant	8 (53%)
General contractor (GC)	3 (20%)

Table 6-7 Summary of job roles previously held by respondents

6.14 Summary:

The research methodology was discussed including the Research approach, philosophy, methodological choices, strategy, techniques, data collection and analysis methods along with data validity. The philosophical positioning of research in ontological assumptions falls on Idealism, in Epistemology on Interpretivist paradigm and in axiology as value laden approach. The abduction approach will be used as it will generate new ideas for developing a framework for a code of best practice to mitigate the claim settlement process in KSA.

The research will follow mixed methodological approach. Due to limitation of time it will be a cross sectional research. Primary and secondary data will be collected. For secondary data literature will be used. While for primary data both Qualitative and Quantitative data will be gathered through face-to-face semi structured interviews and survey questionnaire respectively. For analysing Qualitative data thematic analysis will be performed while for Quantitative data, Relative importance index and weightage score was calculated to identify major cause categories, needed improvement categories and recommendations.

In the end, the data validity and reliability along with ethical considerations were discussed. The chapter ends with an overview about the participants.

CHAPTER 7: DATA COLLECTION AND ANALYSIS

7.1 Introduction:

The chapter will discuss the first data collection method and its analysis for primary data. As research will adopt mixed methodology, the qualitative data collection was planned through face-to-face semi structured interview. The analysis will also be discussed to categories major issues and needed improvement areas that will help in structuring the conceptual framework to be populated for best code of practices for mitigating claim settlement procedure.

7.2 Face to face interviews:

The interviews were designed to collect data from the practitioners about the problems they face in contract claim settlement in KSA. The questions were designed to gather factors related to the causes of those claims and how they are settled.

The qualitative data were analysed to identify patterns to highlight the most frequent factors related to claims. The themes and sub-themes were recorded and coded to condense the important measurable factors. The frequency of the occurrences of each factor related to the issues was considered. To measure the frequencies with equal weighting, the data were converted to percentages. The factors were categorised into groups, with these groups to be used further for the research in designing recommendations.

The basic purpose of interviews was to build the as-is claim resolution process, to help establish the to-be claim resolution alternatives. Analysis of the data will reveal the barriers and the changes required to make the process efficient. The summary of findings and analysis of interviews is divided into the four parts used in the interviewees.

7.3 Section one: Impact of contractual claims on cost and time reimbursement:

The first section gathered respondents' views on the effects of contractual claims on cost and time reimbursements, as well as the process followed and its shortcomings. It included the causes of claim occurrences, the role of key players involved, the complexities arising due to the interdependencies of the processes, and the measures taken at various steps of the processes.

7.3.1 Reasons for claims being endemic:

The respondents felt the claims process was disruptive, time consuming, and often led to a breakdown in working relationships. Claims are not inevitable if a project is well planned with

documents that reflect the uncertainty and risk endemic to any construction project. None of the party's benefit if the project is tendered with poorly defined documents and a design with many contingencies and inadequate detail.

“Preparing the claim requires time, whether for the contractor or even the consultant, or studying it from the consultant or studying it from the owner. Preparing it then agreeing to it or rejecting it also needs time from the consultant or the owner...the time of approval from the owner is also time taking...studying, negotiating, discussions, meetings, evaluation and decision all cost time”

Contractual claims are endemic in KSA construction projects effecting cost and time. The responses highlighted factors interlinked and interdependent throughout the project lifecycle. Using the wrong procurement system, incomplete design, and the government client focused upon minimising their exposure to risk. Procurement is the process which creates, manages, and fulfils contracts. ISO 10845:2020, Parts 1 and 2 define the requirements for construction procurement. There are three phases to the procurement process associated with the delivery and maintenance of construction works: a) the planning phase when the best method of procurement is selected, b) the acquisition phase during which contracts are entered into following the execution of a selection, and c) the contract management phase. The contract management (or contract administration) phase is a vital part of the procurement strategy, during which compliance with requirements, changes in requirements, and risk events which manifest during the execution of contracts are managed.

Procurement strategies include packaging, contracting, targeting strategy, and the selection method. Whilst it is recommended that the public and private sector clients adhere to the international standard for construction procurement, this rarely happens because public sector clients prefer to use their use their standard procurement systems for goods and services, which does not necessarily align with the complex requirements when procuring construction projects. This non-alignment can create problems during the contract management phase and could lead to contractual claims in KSA.

Interestingly, the culture of blame meant that the contractor attributed most of the failures in the system to the client team, whilst not recognising that the contractor's tender offer may have been too low for the risk involved. The construction industry uses the blame culture, rather than moving towards a learning culture where feedback provides information about learning from

the mistakes, as in ISO9001:2015 Quality management systems, where the emphasis is on plan, do, check, act.

Whilst the issue of blame was not explored in depth in the research, in any public sector project, Arab culture will influence decision making. In Arabic culture, to protect loss of face, Arabs will rarely admit to a mistake, honour is more important than facts. Emotions connote a sincere concern for the outcome of the decision. When international companies are involved in the projects, they must be aware of the influence of Arab culture on decision making.

“Yes..., and thus due to the lack of project control, using wrong contracting model, inaccurate definition for the scope of work and design changes... the claims are on rise”.

Another respondent emphasised the problems, stating that:

“Almost all big projects start with incomplete design or design with mistakes. The Owner’s keep changing their requirements and use the wrong procurement approach. The time frame to complete project is unrealistic. The workforce of the contractor lack technical skills of planning and control as well as the labour in market is unskilled...Government also change the regulations and requirements, without considering the consequences on project delivery”.

“The “unrealistic” approach to calculate project time and cost was another aspect. If a client stipulates a contract duration in the tender documents, and the contractor submits an offer with that construction duration, it is unreasonable to blame the client when deadlines cannot be met. Contractual claims can be formulated to claim for an extension of time by citing influencing factors.

“Due to miscalculation of the project’s duration by the project’s owner and not taking into account the problems the contractor might encounter on site during implementation”.

The contractual arrangements must reflect the market characteristics and the project characteristics. Procurement is not an exact science; it is a blended process where risk is allocated.

“There are many reasons but the poor contractual arrangements available in the construction market in the KSA is a big factor”. The respondent continued the argument by bringing in the level of expertise in management as big factor in KSA *“There is lack of adequate project management practices and contract administration with problems that cause more claims”.*

Some viewed the strategic relationship between parties a major contributor.

“I cannot generalize across KSA, yet I will answer you from my knowledge of the market. The widespread incidence of claims is related to who is it from and what strategic relationship they hold. Claims to client from a general contractor (GC) (or designer) versus his strategic relationship, and from subcontractors (SC) to general contractor’s claims and their strategic relationship”.

The external factors are also impacting the performance and causing claims.

“There are many reasons. Many variation orders arise due to change of scope or design and delays to payment of invoices ...but most important is ignoring the unforeseen problems at the planning stage”

The respondents provided answers relating to the factors that cause claims. The most important part of the analysis was to use the answers and link them to problem areas. In the next step of the analysis, the reasons for claims being dominant in KSA were categorised into groups. The construction project life cycle was divided as per Mirza (2005):

1. Pre-tender
2. Contract formulation
3. Construction
4. Post completion

The answers were coded and assigned to each of the above phases, which highlighted the core problem areas from the practitioners’ viewpoint – see Figure 7-1.

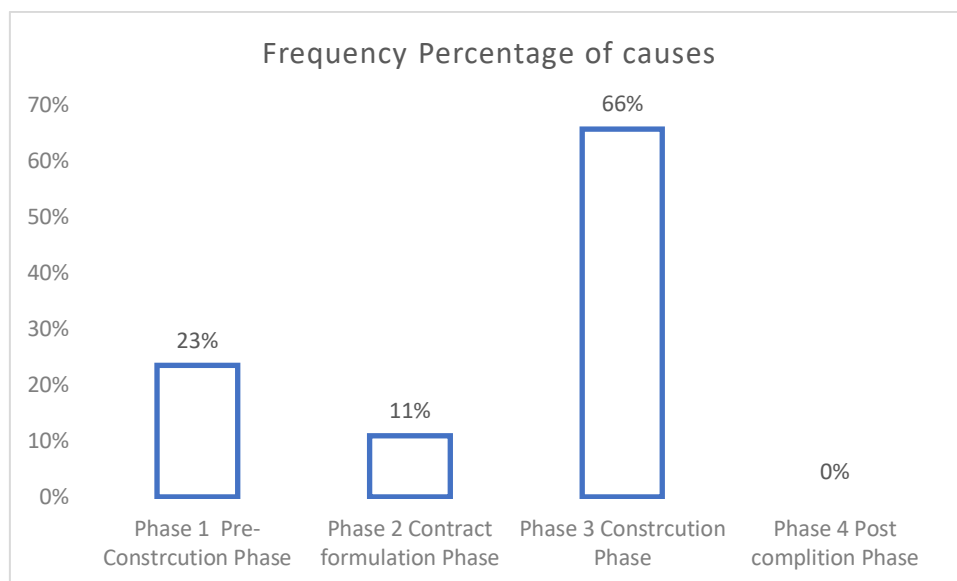


Figure 7-1 The causes as frequency per construction project life cycle phases (Adapted from Mirza, 2005).

The histogram shows that the construction phase is the dominant problem area with the greatest number of causes identified by the respondents.

The next step was to examine these issues in the construction phase and merge them into identifiable groups/categories that can be linked to processes and persons in the project life

cycle. The answers highlighted four types of dominant factors that cause issues in the construction phase (the identified dominant problem area) of the project:

1. Project Management and Control (PMC)
2. Changes (design, scope, requirements, laws, variation orders, mostly associated with the tendering process/pre-construction phases) (C).
3. Behavioural aspects (ways to handle dispute when they arise, attitude, and power dynamics) (BA)
4. Skill Force (SF)

This helped identify core issues, their interdependence and interrelationship within the project progress. Figure 7-2 shows the frequency of the factors that create issues in the construction phase.

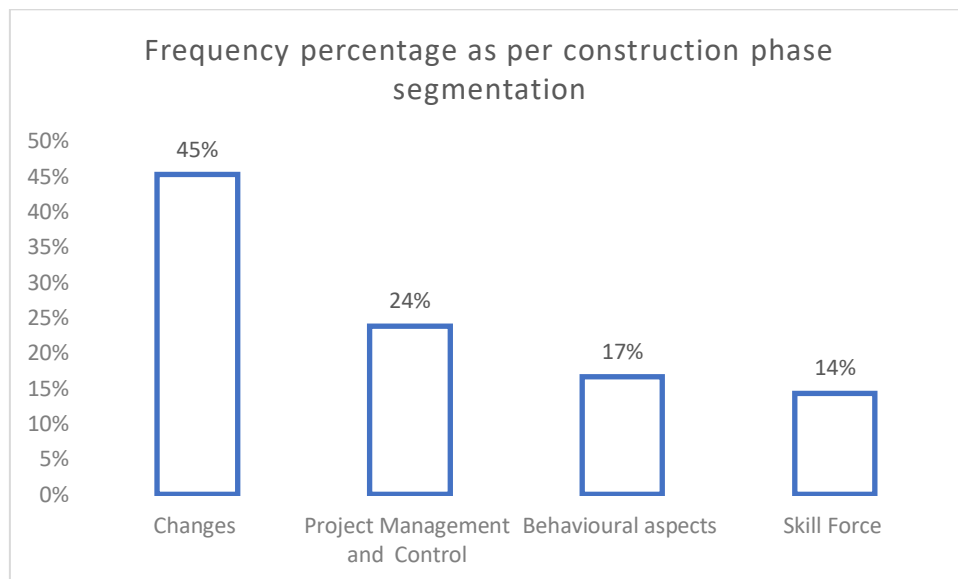


Figure 7-2 Frequency of dominant factors in the construction phase

The reasons are deep-rooted into the processes which are "interlinked" and "interdependent". The major causes are the construction phase. The problems dominant in this phase are related to changes, including design changes (which can delay invoices), requirements changes, additions to the requirements, variation orders, rules and regulation changes, and changes in the scope of work. Many of these are linked to the pre-construction phase. The behavioural aspects also contribute to the occurrences of claims. The scarcity of a skilled workforce is another contributor.

7.3.2 *Size and type of project:*

The question was a continuation of the previous question exploring causes of claims and the complexities that underlie the actual causes.

The size and type of project implementation can impact claim occurrences and need to be understood by the practitioners and requires careful planning.

The claim occurrences in relation to size and type of project also brought into focus other interconnected factors like the pricing structure and the legal approaches that parties undertake for conflict resolution.

“Yes, the substantially increasing volume of claims are the result of the rising complexity of the projects... There are other factors too that have negative influence like the pricing structure of the construction industry and the legal approach taken by a lot of owners and contractors when any conflict arises”.

Reference to the pricing structure highlights the KSA system where lowest price dominates, rather than value for money, or most economically advantaged tender. The approach is used by the specialty contractors who are conscious that when submitting tenders that bid shopping will take place once the main contract is awarded. This leads to a claim-based culture in the industry, where contractors and specialty contractors adhere rigidly to their contractual responsibilities and seek advantage to exploit situations where the contract can be used to formulate a claim for additional time and cost. In public sector projects the consultants must adhere rigidly to the contract and the regulatory system.

Another response highlighted the need for specialisation and better management, which relates to complexity and size.

“The size of the project means complication in the project, and the type of project means specialization in the project, the contractor, the consultant... so bigger projects need specialists and the complexity need special requirements to be managed”.

The losing party bears the cost of settlement, and this is a major factor.

“The expense of settlement needs to be cleared by the losing party so bigger projects are likely to have more claims”.

Another argument was:

“Size and type do not matter if the bid documents are appropriate, the scope agreement is without flaws, and contract models are right, but that is rarely the case in KSA public sector projects”.

Another aspect is the intent adopted by the parties. Intent can also be considered as bias, if one of the parties has the sole intent of gaining advantage, rather than seeking equitable settlement. None of the respondents raised the issue of information asymmetry where one party has the advantage of having access to information they do not share with the other party. When two parties in a business transaction have access to the same relevant information, their business relationship is completely symmetrical. In many transactions such as the formulation of a claim, one party is likely to have access to more information or better information than the other party. It can give advantage to one of the parties in the transaction.

“It all depends on intent”.

The answers were analysed and categorised into groups that broadly describe the factors that need to be focused to achieve effective project progress and that play a crucial role in the claim management process. The categories that are identified through respondents' views are

- Complexity is a major influence
- Defined scope of work
- Specialisation and project management
- Adequate contract
- Competitive bidding
- Legal Approach
- Pricing structure
- Clarity of bid document
- Intent
- Cost reimbursements.

Figure 7-3 shows the frequency percentage of factors expressed by respondents as relevant with respect to size and type of project. Bigger and more complicated projects need specialised teams and better project management and planning. The clarity and definition of the scope of work is another key aspect. The contract used also affects conflict handling. The clarity and completeness of bid documents is the backbone for the implementation phase.

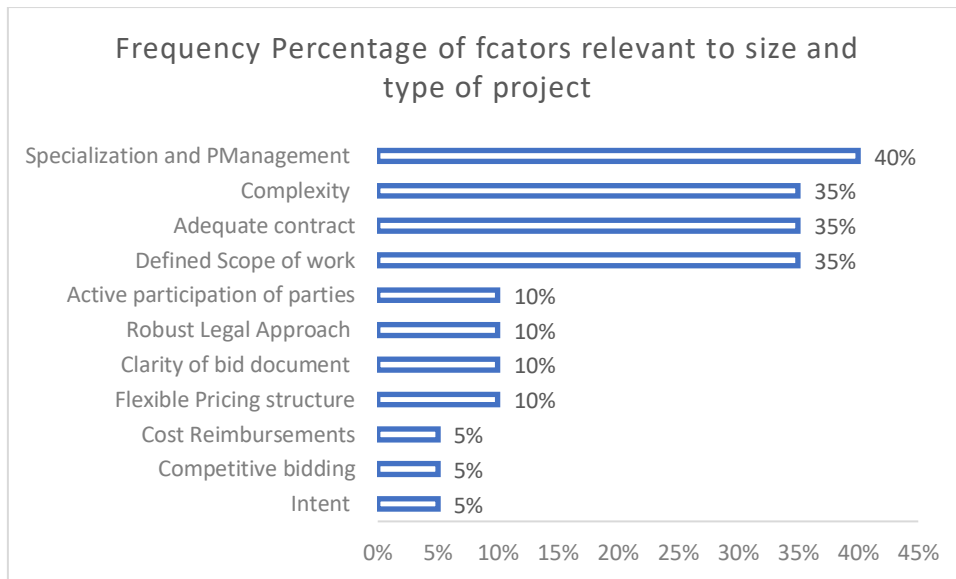


Figure 7-3 Histogram of the frequencies of the factors relevant to size and type of project identified by respondents

7.3.3 The current contractual claim system:

The respondents expressed dissatisfaction over the effectiveness of the current system. Their view was that the system ineffectiveness needed to be investigated to devise improvements. One respondent considered it as being too general in approach to handle all types of projects.

“The current systems must be developed to fit all types of projects, whether it is related to the size of the project, the nature of the project, or the project duration.....these factors (size, nature, duration) affect the procedures followed to undertake the project”.

One respondent argued about the linkage between the type of contract used and the effectiveness of claim settlement:

“Current system is not appropriate. Many mega projects have incomplete or modified versions of FIDIC standard forms, which do not give different parties their rights, especially the contractors”.

FIDIC contracts are a suite of contracts used around the world for all types of projects, particularly infrastructure and industrial plants. Modifying the standard terms and conditions in the contract is not good practice except in exceptional circumstances.

The limitation of the current system of contractual claims settlement is another major problem.

“If claims are meant here for disputes, I would say the system of settling these in Saudi Arabia is not efficient; majority of projects are being procured based on the unified utilities standard form of contract, which allows litigation as the only means for settling disputes. Government entities for example are not allowed to be part on any mediation or arbitration”.

The lack of procedural details is another factor:

“There is no separate and detailed system for claims and the time taken is very long”.

Another argued:

“Most of the cases, the agreement depicts a mechanism of claim resolution, but the mechanism does not specify that how it can be done. The how is important as claim resolution is all about contractual entitlement, forensic analysis and compensation analysis”.

An important issue is being identified that reflects the research gap, which is the need for a standardised approach.

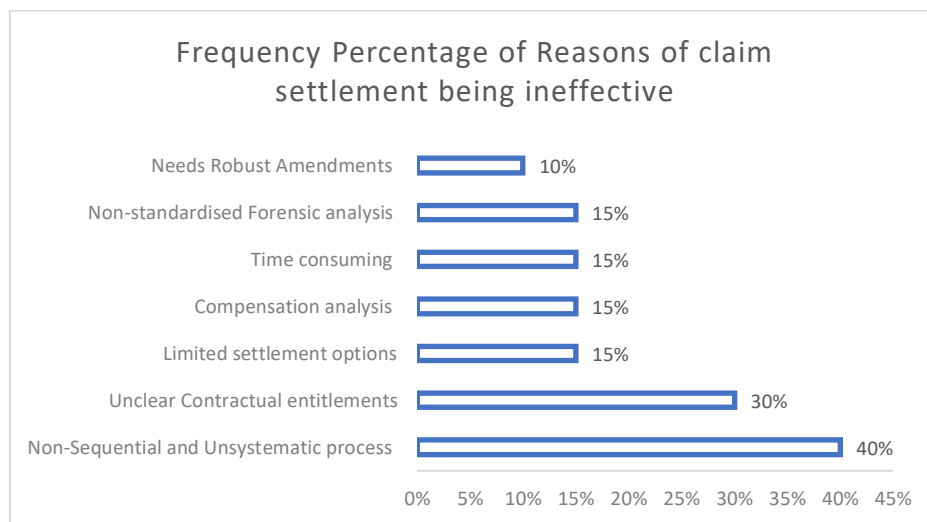


Figure 7-4 The frequency of the reasons for ineffective claim settlement

Their reasons for the ineffectiveness (see Figure 7-4) were categorised to understand core inefficiencies and to feed into the framework for a code of best practice that could eliminate the inefficiencies:

- Non-sequential and unsystematic process
- Unclear contractual entitlements
- Compensation analysis
- Time-consuming
- Non-standardised forensic analysis
- Limited settlement options
- Needs robust amendments

The non-sequential and unsystematic process was the most frequently cited reason, with poor contract drafting affecting the settlement process negatively in second place. The frequency of the other factors was similar.

7.3.4 Bureaucracy:

The term bureaucracy refers to a complex organization that has multi-layered systems and processes that effectively make decision-making slow and procedural. Rules, regulations, and systems are designed to maintain uniformity and control within the organization. A bureaucracy describes the methods that are commonly established in governments and large organizations. The bureaucratic process lends itself to criticism and is synonymous with redundancy and inefficiency. The interviews seek the perception of practitioners regarding the influence of bureaucracy in the present system. The respondent's general perception is "negative" due to the time taken, and processes followed. Respondents understood the importance of this layer for accountability and transparency, but felt the procedural details created inefficiency. Bureaucracy often means seeking compliance with regulatory and obtuse requirements not central to the argument but sufficient to delay the process.

One respondent considered bureaucracy and bias. If the decision maker's fees are being paid by the owner, that person will be influenced by opportunities for future work and income generation. In theory the decision makers are impartial and non-aligned; this is often not the case.

“Mostly there is a power dynamic running in the system especially with government organization where they will try hard and pressurise the contractor to give up his right by adding bureaucratic procedures. It is a kind of bullying the contractor to meet new conditions and requirements. If the government or the even a project manager who is beneficiary from government side has a clash with contractor, they are feared to be put in blacklist for 5 years”.

The respondent's suggestions for improvement were varied and broad.

“The selection criteria for the contractors and suppliers should be developed considering the geographical distribution of kingdom regions and the logistical capacity, giving more opportunity to medium and small enterprises”.

Respondents stressed “construction sector reforms” in the form of policy level changes.

“The public sector needs to change the construction procurement policy and the standard form of contract used to procure government construction projects. More standardised project management standards should be mandated like in the UK”.

“In my opinion, it is not only KSA public sector, but all sectors. Keep in mind clients do not want to conduct a collaboration agreement to share liabilities. Clients always perceive that a delineation of scope and responsibility is a prime objective. The emphasis on compliance, process, and procedure is important for clients. Yet it should be to a certain extent. What I mean is when conflicts exist on a claim, it is important to resolve it quickly. Change that I would suggest is in processes to include timeframes and the escalation process”.

Another respondent stated:

“An alternative system could be developed for complex or speedy tasks. Where a specialist team is formed on ad-hoc basis for the project. The deadlines to answer the queries could be made minimal in this alternative system to have speedy response from the bureaucracy and keep things moving in fast pace. So, these alternative dispute resolution approaches need to be emphasised more for better settlement options”.

Some suggested that *“Electronic system can be set up to facilitate the claims process”.*

Artificial intelligence (AI) is opening new possibilities for electronic claims to be more automated. Document Crunch is a software that identifies critical provisions in construction contracts, insurance policies, plans and specifications. Its AI has ‘learned’ what industry experts believe are the most important provisions for review. The next stage would be to modify the approach for AI to be used in formulating contractual claims.

Another argued that changing the way things are done would increase efficiency:

“It can cause little difficulty and can be improved with the change to electronic system and training to use that system”

The analysis of suggestions presented by respondents for amendments or improvements in the process were grouped into two broad categories:

1. Reform construction sector

- Improve standard contract
- Reform selection criteria
- Reform construction sector
- Improve procurement policy
- Standardise evaluation of companies
- Mandate PM standards

2. Reform Processes

- The alternative system with time frames
- Change to electronic system
- Identify escalation processes

The histogram shows the distribution of the suggestions recommended for change by the respondents. (Figure 7-5)

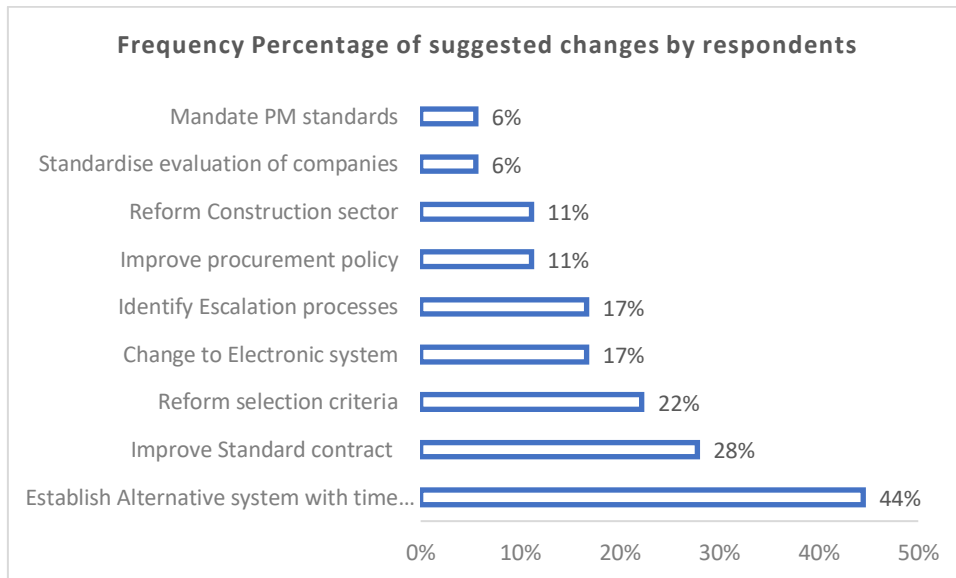


Figure 7-5 The frequency of the suggested changes for improvements

The respondents considered most important factor for reducing bureaucracy was to introduce systems that have time frames/limits for each task (approval/procedure). Improving the standard contract was ranked second. Respondents emphasised improving selection criteria for project. This indicates the dissatisfaction over adopted process for contractor’s selection.

Two other processes were emphasized. One was changes to the electronic system; the other was Identify escalation processes. Risks about project objectives or resources, inter group conflicts, scope disagreements, third party dependencies are example of some issues that need efficient and effective escalation for timely fixes so that progress is not blocked.

The responses were categorised in two broad categories. These categories highlighted the “focus areas” needed to be reformed in view of responses – see Figure 7-6 for the percentage frequency distribution of responses falling in each category.

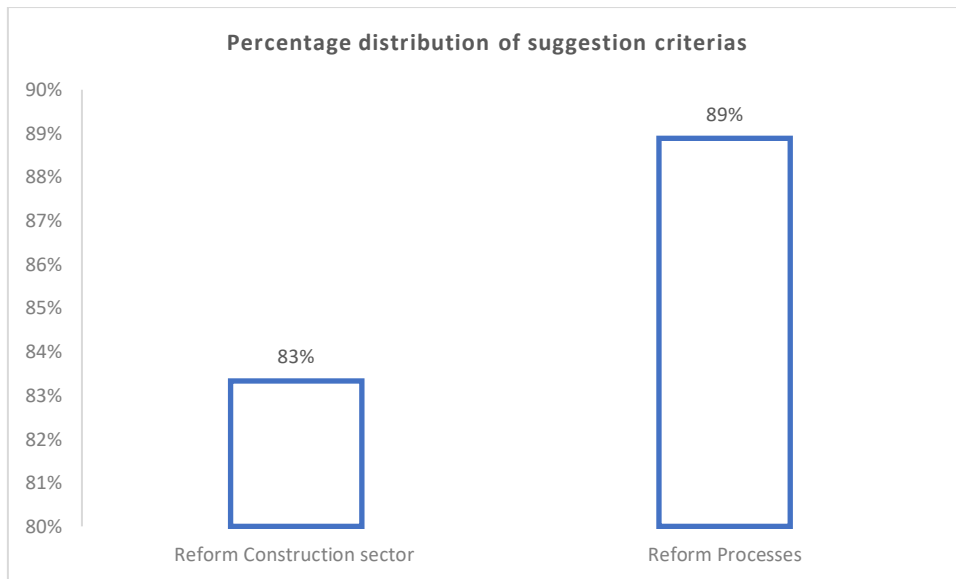


Figure 7-6 The main areas of reform

Each category was then analysed to rank their frequency.

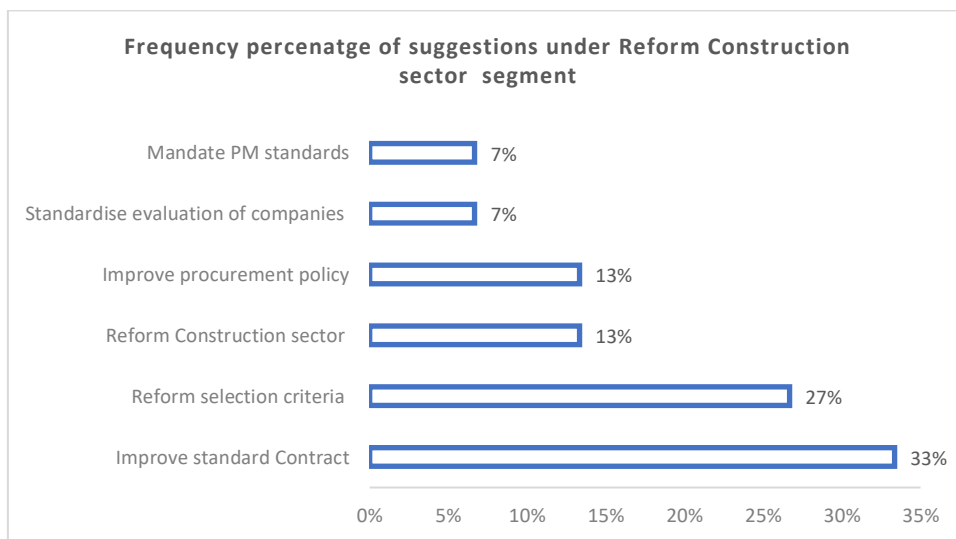


Figure 7-7 Frequency percentage of suggestions under reform construction sector segment

The reform construction sector segment showed that respondents want standard form of contract to be modified as per modern needs. Another important dynamic of reform is amending selection criteria (procurement policy) to assess the experience, speciality, and technical eligibility before awarding contract. Standardise evaluation criteria of companies and their grading is the next needed improvement (see Figure 7-7).

The frequency of suggestions under “reform processes” highlighted the need to consider alternative systems to resolve conflicts. These systems include considering time frames or constituting special committees or ad hoc bodies for each project to make approvals and decisions faster. The volume of resources required for such ad hoc bodies’ specifically for project might be exhausting (see Figure 7-8).

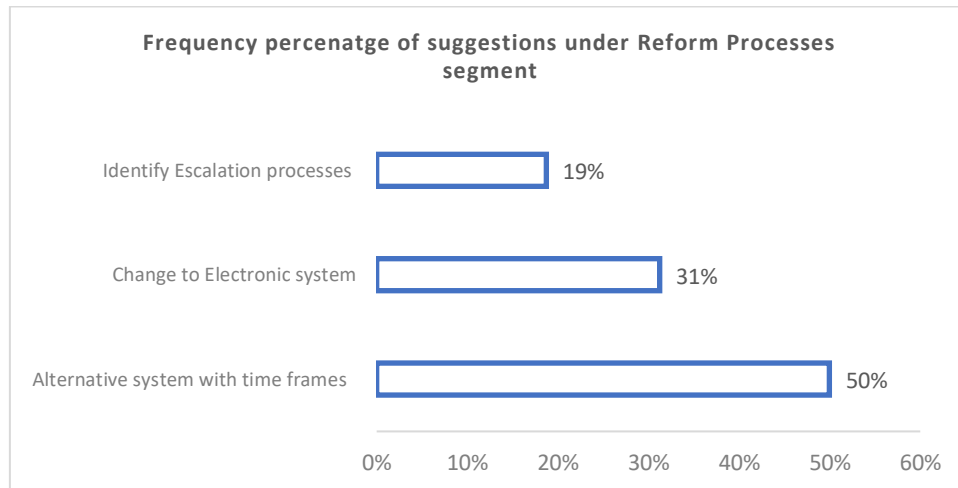


Figure 7-8 Frequency percentage of suggestions under Reform Processes segment

7.4 Section two: Causes of claims in KSA construction projects:

The second section of interviews focused on identifying the issues and causes underlying the problems being faced by the practitioners. The complexities, interrelationships, and interdependencies between the causes, claim initiation, and the procedure to settle claims is very important to understand how to develop better practices.

7.4.1 Underlying causes:

The respondents were asked to provide their opinion regarding the underlying issues that trigger contractual claims in the KSA. They cited the design process as the leading problem area with 89% frequency, procurement system second with 60%, and site production process third with 55% frequency distribution (see Figure 7-9).

“Procurement system, design process and site production process all cause contractual claims. The difference is that their role depends on size and nature of the project... site production process might be causing more problems in some complex project whereas design process might be more problematic for some new initiative...so the percentages vary dependent on these factors”.

The inefficiencies of the design process were identified as the underlying causes of claims later in the implementation phase. The interface between design teams often creates challenges. Design is not a linear process, it is iterative; non-linearity means that design teams are constantly changing the design to reflect new situations. The procurement system also creates many problems with a weak contract awarding process as well as incomplete contract drafting practices. The site production process came last but was still significant. The responses showed that the issues faced by practitioners are linked to the design and procurement processes.

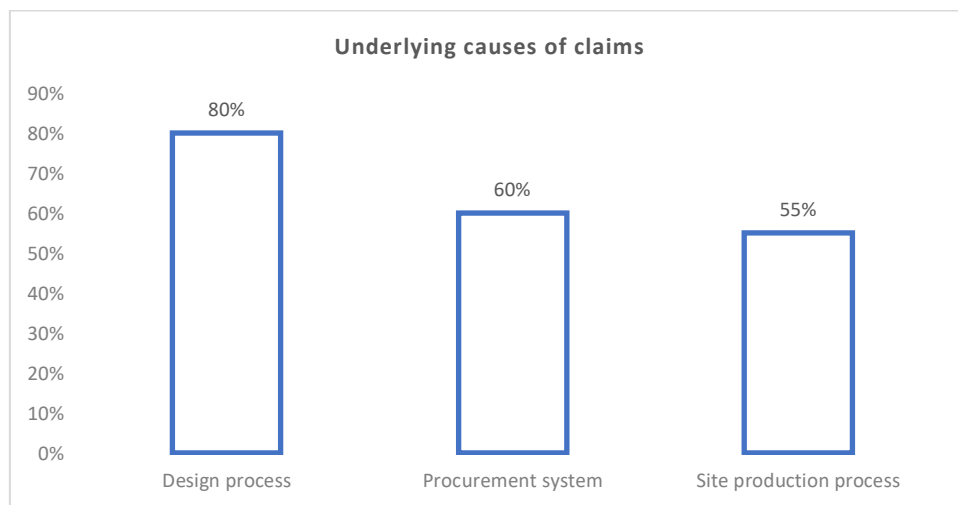


Figure 7-9 The underlying causes of claims

One opinion was the *“poor scope of work and specification are the most important causes...unfair risk allocation in contracts comes next. The latter is a direct consequence of poor procurement system”*.

Another respondent answered *“The underlying cause is the design process and the lack of assessment of site problems that may occur during implementation. These reflect negatively on estimating of the correct duration of the project”*.

The interdependence is another big factor.

“Variation order and delays in paying invoices are most problematic. And it’s the fault of lack of design process (preconstruction process) that also delay the employer for paying the invoices”

Another response emphasised shortcomings in all three relevant aspects of defining work, implementing work efficiently, and behaviour involved in resolving problems.

“Undefined scope of work, inexperienced contractors and behaviour of all parties involved in conflicts are the underlying causes”.

Procurement system underlying issues were also focused.

“Awarding of the contracts to the lower price competitor” and adding *“the competitiveness of the procurement system”* as major cause to underbid and later raise claims.

The design process is the most important factor. There are many “causes” that are generated at this step affecting the later stages as one answer suggested.

“The possibility of claims can be reduced if detailed studies and detailed designs are made for all project details”.

In the next step, the issues presented by respondents were categorised into the following groups: factors affecting the design process, procurement system, and site production process. The issues were categorised under each group are as follows – see Table 7-1, Table 7-2 and Table 7-3.

Factors affecting the design process	% Frequency
Incomplete/Inaccurate Design	30%
Inadequate scope of work/specifications	21%
Change requirements	17%
Incomplete assessments	13%
Delay invoices	13%
Unrealistic time frame	4%

Table 7-1 Factors affecting the design process

Factors affecting the procurement system	% Frequency
Procurement procedure	29%
Unclear contract	24%
Poor contract management	12%
Unfair risk allocation	12%
Lowest bid award	12%
Competitiveness	12%

Table 7-2 Factors affecting the site production process

Factors affecting the Site Production Process	% Frequency
Implementation/production complexities	31%
Inexperienced contractors	25%
Behavioural issues	25%

Change in regulations	6%
Unskilled workforce	6%
Project management issues	6%

Table 7-3 Factors affecting the site production process

The analysis identified factors regarded as problematic by practitioners under each subsequent category. The design process is the weakest link with incomplete assessment and incomplete design. The contract awarding process to the lowest bid has implications for the procurement process as well as for the site production process. Contracts are unclear and ambiguous with regard to rights and obligations.

The complexities of the implementation are ignored. The attitude towards work as well as conflict is what instigates disputes and makes them lengthy. Inexperienced contractors and scarcity of skill force were also mentioned.

7.4.2 Procurement of contract:

The respondents were asked about the procurement of contract and the factors it is based upon in KSA. This is linked to the performance phases of the project. The responses highlighted that contract awarding is based upon the lowest bid in KSA. (Figure 7-10).

Many responses regarded this as a source many performance-related issues.

“The main underlying cause for claim is awarding contract to lower price competitors. Even in procuring the contract and evaluating the bids the fundamental factor that is considered in KSA construction projects is the lowest cost tender”.

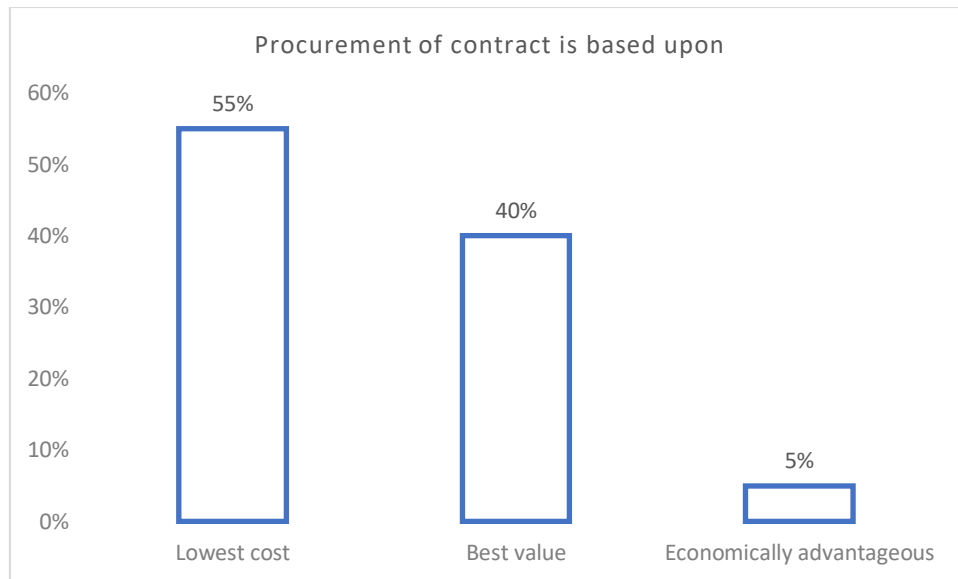


Figure 7-10 The factors upon which the procurement of contract is based

Another respondent explained “*The sector if properly classified then it can have better and clear standards and procedures. With well-defined criteria only classified companies will come forward for the job*”.

Bidding process problems were also mentioned like “*contractors underbidding to win*” or “*competitive bidding*” causing lower bids, along with problems of wrong specifications and quantities.

The technical and financial qualifications are often ignored. This leads to performance issues and cash flow issues in the project that ultimately creates conflict. The grading and classifications can help in reforming the sector for refined workforce.

7.4.3 Difficulties faced in KSA: risk passed to construction team:

The most important factor is to understand the "difficulties that practitioners feel and face in their operations". Identifying the issues and linking them to the process is key to determining the interrelationships and interdependences. This, in turn, is important to codify best practice.

Most of the respondents perceived risk as being regularly passed to the site production/construction team.

“*The risk starts from the operating environment and is passed to the site construction team in later stages*” where “*untrained work team also causes difficulty*”.

A respondent stated, “*Client contracts are intentionally drafted to pass the risk down to GC or SC*”.

The difficulties in operation are also dependent on the procurement system and the contract drafting phases of project. This was highlighted by some of the respondents

“*If site means contractor, the answer is yes; all risks are passed to contractor due to procurement system*”.

“*If all parties especially contractors did not actively participate during tender bids then difficulties will arise*”.

The risks need operative measures and ways to neutralise them. The risk allocation is the most important part of drafting and creates disputes. Some responses brought forward both factors, the risks, and operational difficulties, causing conflicts.

“*There are risks during implementation, and the operating environment causes difficulty on the site, especially with regard to overlapping powers of governmental, semi-governmental and private authorities, as this affects in terms of granting the licenses necessary to start business and the different procedures for granting licenses and their duration from one side to the other*”.

7.4.4 Claims related to type of projects:

Respondents were asked that in their experience are claims more likely to happen on particular types of projects. This needs closer examination to ascertain the dynamics of different types of project that impact the occurrence of claims, and how to reduce the impact of such factors.

Respondents felt that projects that are difficult to estimate in the pre-production stage and more difficult to handle are more prone to claims. These complexities if not addressed early in the project cause problems. For example, the quantities may vary, or the technicalities are not well known. Budget is also based on the bill of quantities. The repair and restoration projects are complex because quantities may vary from estimates. Similarly in a public utility project, cost and time limits are very rigid.

Centralisation of data relevant to project can help in understanding problems and project complexities that may arise in certain type of projects. This is a step towards concurrent engineering where information can be digitally shared, transferable and accessible through network connectivity for dynamic decision making.

7.4.5 The standard form of contract fit to modern needs:

The respondents were asked to provide their opinion on the use of the standard form of contract used by the public sector. They were predominantly dissatisfied. (Figure 7-11)

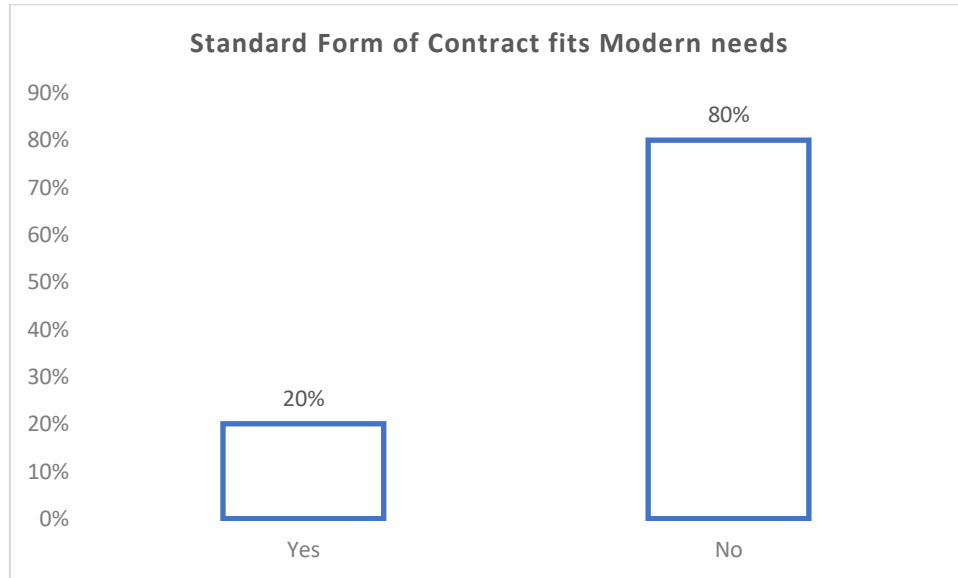


Figure 7-11 Standard form of contract fits modern needs

The responses reveal the need to amend and adopt a more balanced approach where the uncertainty and risk is allocated with consideration given to the ability of the parties to carry the risk. Government contracts ensure the public sector does not carry undue risk, they tend to follow a bureaucratic process where the main requirement is compliance with the regulatory and legal system.

“Fit for purpose with respect to modernization is expected to be in high demand. So yes, we need to change somehow to more modern forms of contract”.

“Contracts like FIDIC can be modified for the nature of construction as it differs in different countries. The contract must maintain the local terms and the prevalent local industrial norms. Around 90% problems could be looked upon if detailed contract is present that also makes contractor aware to apply the contractual terms correctly. Simple contract may not be that explanatory to define contractor’s liabilities. The grey zone between them depends on intentions”.

The KSA construction industry is adopting modern methods of construction with more off-site production, but the contract is still rigidly adhered to. Standard FIDIC contracts are frequently used in both large and small construction projects, and they are suitable for parties of different nationalities, speaking different languages and coming from different jurisdictions. FIDIC

contracts are a suite of contracts, where there is a dispute resolution process with a dispute resolution board appointed to consider the settlement of any disputes. Government bodies may use FIDIC contracts in special circumstances, but their preference is to use the standard form of procurement prevalent in the country. In the KSA, Sharia law is important, which is a special circumstance for FIDIC agreements. The KSA legal system is based on the principles of Sharia Law which, following the Hanabali school of Islamic interpretation, adopts a fundamentalist and literal interpretation of the teachings of the Qur'an. Sharia Law prohibits unjust enrichment and speculation; therefore, a contractor may only recover damages for the loss actually incurred. Liquidated damages clauses are generally permitted but are subject to the principles of Sharia Law. The principles of Sharia Law place great importance on the duty of good faith. Whether a party has acted in good or bad faith will depend on the particular facts and circumstances of each case. Contractual provisions that violate the fundamental principles of Sharia law will not generally be enforced by the Saudi courts.

7.4.6 Introducing standardised claim settlement:

In line with the perception regarding claim settlement, it was also gauged that either the practitioners are ready and willing to commit to a standardised claims settlement procedure. Mostly they agree on introducing standardised claim settlement procedure to improve and benefit the whole system (see Figure 7-12).

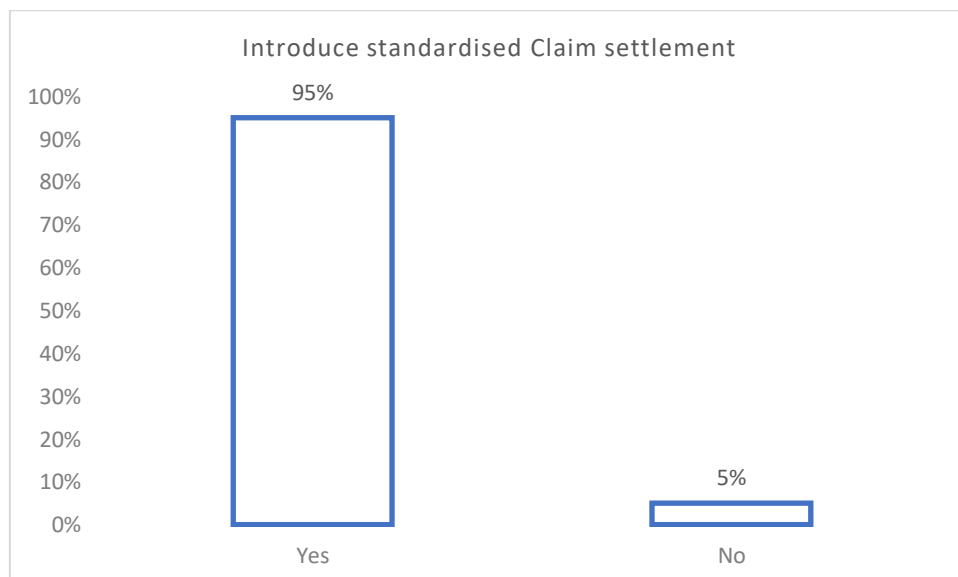


Figure 7-12 Introduce standardised claim settlement

7.5 Section three: Claim resolution methods employed in KSA construction projects:

The third section of the interview was about methods employed in KSA for a claim resolution. The process that is followed and the problems these processes have are the overriding reason for better practices to be implemented in KSA.

The core factors need to be identified to highlight the problem and its relationship with other processes. The crux of mitigating the negative effects is to align practices along with the problem areas, keeping in view the complexities of interrelationships they possess.

7.5.1 Preferred methods of claim resolution in KSA:

The most important aspect was to gauge perception regarding the preferred method of claim resolution used in KSA construction projects.

One respondent emphasised the importance of local law and practice.

“Depends on the law used in the contracts”.

The respondents’ answers highlighted that arbitration is the most preferred method for claim settlement in KSA; litigation is second in choice. (See Figure 7-13)

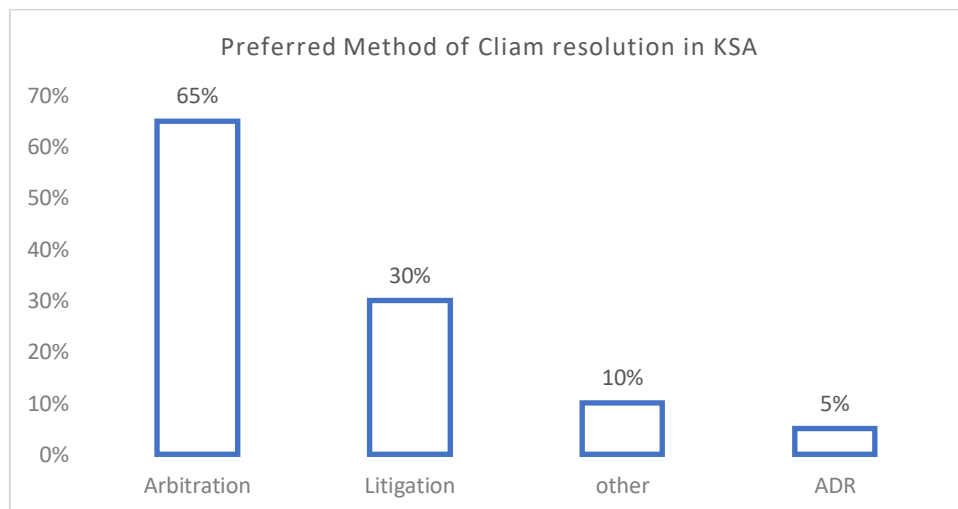


Figure 7-13 Preferred method of claim resolution in KSA

It is important to weigh the advantage and disadvantages of methods and consider why alternative dispute resolution methods are not often used.

“It either depends on arbitration in KSA or abroad either UK or UAE”.

7.5.2 Better ways to resolve contractual claims:

The interviewer tried capturing respondents' views regarding options to claim resolution in the KSA construction sector. Their views will provide the foundation to build the framework.

The practitioner's view of "what they regard to be good enough" or "what needs to be amended" (see Table 7-4) will help to building up categories of improvements that should be considered. An analysis of responses revealed the following choices (frequency distribution):

Better ways to resolve contract claims	% Frequency
Time framed	30%
Negotiation	20%
Effective claim management	15%
Encourage ADR methods	15%
Flexible approach	15%
Engage claim experts (claim consultants)	15%
Constitute specialist committee for claim resolution	15%
Mediation	10%
Attain legal support	10%
Brief claim documentation	10%
A fair evaluation of claims	10%
Train law firms about construction industry conflicts.	10%
Draft clear specific contract	10%
Arbitration	5%
Adjudication	5%
Standardise processes	5%
Awareness about choices	5%
The sequential and detailed way of handling conflicts	5%
Classification of sector	5%

Table 7-4 Better ways to resolve contract claims

These answers were categorised into groups, reflecting "broader area of improvements". These groups will be further used to codify and rank options that can be utilised in KSA.

The identified categories are: (see Table 7-5):

- Develop efficacious claim management process

- Claim submission and evaluation
- Focus on ADR methods
- Judicial training

Categories of suggested improvements	% Frequency
Develop efficacious claim management process	23%
Focus on ADR methods	47%
Judicial training	16%
Claim submission and evaluation	14%

Table 7-5 Categories of suggested improvements

The analysis of these groups will help to understand from the practitioner's perspective regarding "better options" to be considered for the claim settlement process.

7.5.2.1 *Develop efficacious claim management process:*

Five of the coded groups fall into this category – see Table 7-6 The need for effective claim management and involve experts in doing so was stressed the most by the respondents.

Develop an efficacious claim management process	% Frequency
Effective claim management	30%
Engage claim experts (claim consultant)	30%
Draft clear specific contract	20%
Classification of sector	10%
Awareness about choices	10%

Table 7-6 The coded groups within development of an efficacious claims management process category

7.5.2.2 *Focus on ADR methods:*

Seven of the coded groups fall into this category – see Table 7-7. The analysis of responses shows respondents' willingness to introduce time frames to the process and encourage alternative methods that foster flexibility, win-win situations and rapid decisions.

Focus on ADR methods	% Frequency
Time framed	30%

Negotiation	20%
Encourage ADR methods	15%
Flexible approach	15%
Mediation	10%
Arbitration	5%
Adjudication	5%

Table 7-7 The coded groups within the 'focus on ADR methods' category

7.5.2.3 Judicial Training:

Three of the coded groups fall into this category – see Table 7-8.

Judicial Training	% Frequency
Constitute specialist committee for claim resolution	43%
Train law firms about construction industry conflicts.	29%
Attain legal ideal	29%

Table 7-8 The coded groups within the judicial training category

7.5.2.4 Claim submission and evaluation:

Four coded groups fall into this category (Table 7-9). The dominant recommendations included introducing a standard claim submission process, essential support documentation and analysis and evaluation procedure.

Claim submission and evaluation	% Frequency
Brief claim documentation	33%
A fair evaluation of claims	33%
Standardise processes	17%
The sequential and detailed way of handling conflicts	17%

Table 7-9 The coded groups within the claim submission and evaluation category

7.5.3 Fundamental problems of claim resolution:

This part of the interview focused on the fundamental problems of the claim resolution process in KSA. The respondents described the underlying issues/factors amongst five different categories associated with claim resolution to highlight the core problem area:

- People's attitudes

- The process followed
- The mechanism of the settlement
- Failure to use modern information technology
- Lack of a disciplined approach towards claim settlements

It is important to establish which of these problem areas makes the whole process inefficient. Figure 7-14 shows the frequency of times each of the issues were mentioned.

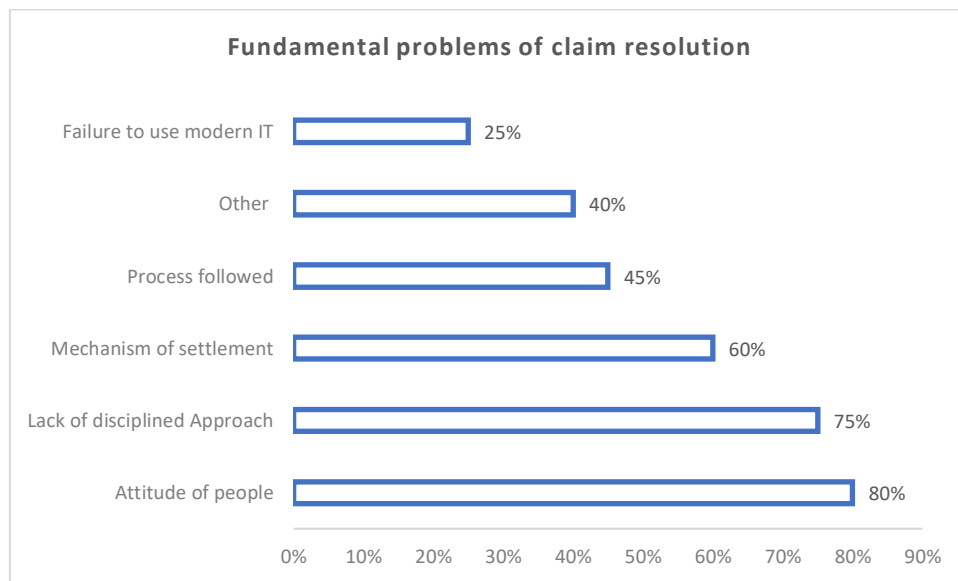


Figure 7-14 Ranking of the fundamental problems of claim resolution

The analysis of answers revealed that people’s attitudes are the biggest barrier in reaching a settlement. A disciplined approach is missing, which make the process vague and ambiguous. The lack of usage of modern technological support is another barrier.

The respondents also added some more factors that were added to “others” category. These were:

- Absence of specialists to study and make right decisions
- Lacking professional behaviour (effecting personal relation)
- Cultural aspects.
- Personal interest

“Claim becomes personal and affects personal relationships”. Also “The attitude of parties creates more problem; they fear of loss”.

The view was that problems associated to resolving claims are interlinked.

“The system contributes to all the aforementioned (all the problems); for example, due to availability of litigation as a single method for resolution, people attitude tends to be adversarial”

The behaviour and the intent are utmost important when resolution is needed. The fear of loss does make behaviour rigid. The aspect of party bearing cost of settlement also plays important part. In KSA the professional and personal relations tend to merge hence leaving bad taste in case of conflicts.

The approach or mechanism for resolving claims is required. There is a need of specialists to carry out the study and make the right decision at a specific time.

7.6 Section four: Alternative Dispute Resolution (ADR) in KSA construction projects:

The fourth section of the interview was designed to obtain practitioners’ opinions on, and readiness for, alternative dispute resolution methods in KSA. Their view was also sought on how well the construction industry could adapt to any changes. It is important to establish the advantages and disadvantages associated with ADR methods to help establish the framework for best practice.

7.6.1 Critical factors:

The practitioners’ input as to what should be considered, or focused on, to improve things will lay the foundation to codify the best practices.

An analysis of the responses regarding the critical factors for ADR was undertaken as per the frequency of occurrence of each suggestion. The answers were grouped into categories. See Figure 7-15 which helped to understand the areas where improvements are needed and can be focused upon.

As per respondent *“There is mainly one critical factor in KSA. The factor being intent to amicable resolution outside the court”.*

Another respondent added more factors like *“Speed in conflict resolution, Experience in the field of conflict resolution and specialization are very critical”.*

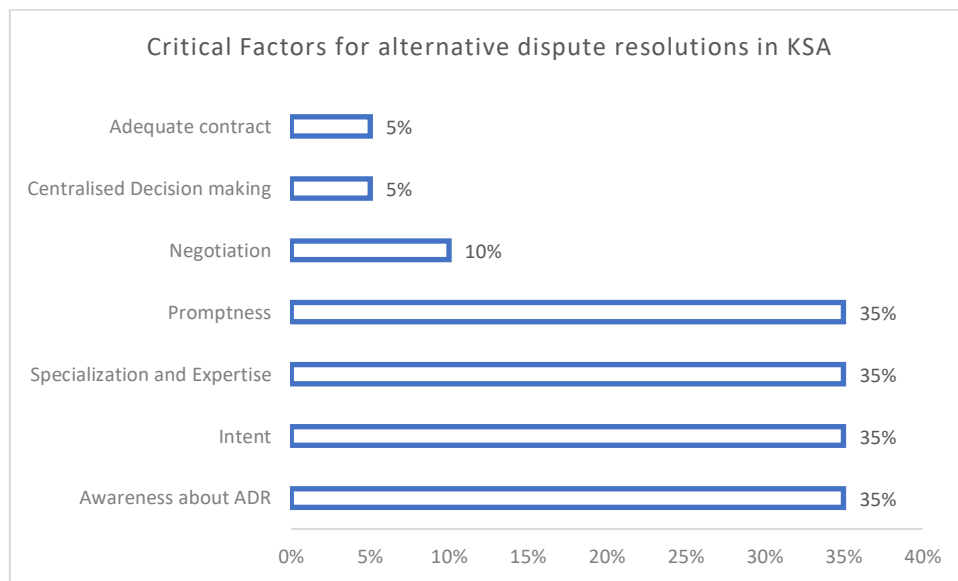


Figure 7-15 The critical factors for ADR identified in the interviews

Awareness about ADRs is most critical. Awareness and knowledge are the first step to adaptability. The change in behaviour is achieved through raising awareness.

It is also critical to make speedy decisions and conflict resolution as it is to benefit both sides, but this also needs specialisation and expertise in conflict settlements.

Centralisation of information and decision making is also very important. The dispersion of knowledge across the project stakeholders will help in decreasing the volume of conflicts or disputes over misinformation or uninformed decision.

7.6.2 Barriers to using ADR methods:

The barriers to using ADR in KSA are also investigated. The interview responses revealed the actions that should be considered in designing and then adopting the changes. The factors mentioned by respondents hindering the acceptance fall into 9 broad categories. The frequency percentage with which they were mentioned is shown in Figure 7-16.

- Lack of awareness about ADRs
- Cultural aspects
- Attitude
- Delay in resolution
- KSA Procurement law

- Lack of legislative framework
- Cost of hiring arbitrators
- Lack of experts as well as expertise in conflict resolutions.
- Concerns about trusting the non-judicial system and decision binding

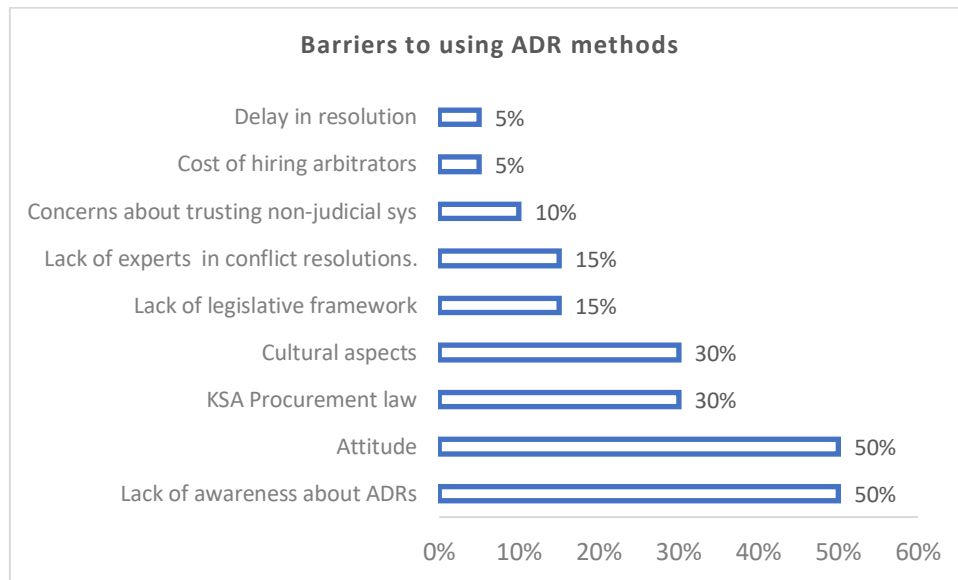


Figure 7-16 The frequency of barriers to ADR methods reported in the interviews

The respondents highlighted many barriers like *“Lack of awareness in ADR is biggest barrier in KSA. But culturally it also becomes difficult. There are concerns over the final decision’s effectiveness and trusting non-judicial bodies. Above all they fear change”*.

“Lack of legislative framework and experts in the field” is another barrier that prohibits such alternative methods.

Another respondent replied, *“I think the barrier is knowledge about ADR, but it all depends on the intent”*.

Another stated.

“The traditional government contract method that does not allow the use of alternative solutions” and the *“KSA procurement law”*.

To overcome concerns the need is to raise awareness and educate about ADR. This does need input in form of legal framework but more importantly expertise specialised in dispute resolution.

7.6.3 ADR methods suitable for KSA:

The final question was regarding the most suitable ADR method that can be employed in KSA. The answers covered a wide range of ideas – see Table 7-10.

The respondents answered broadly reflected suggestions to improve the process in KSA. The suggestions ranged from “modification of contract” to “Legal infrastructure”.

“Maybe contracts could be drafted to include a section between the section of claim clauses and arbitration clauses that describe clauses to enforce amicable resolution”, another suggestion was to adopt “Some modification of the contract formula to match global contracts such as FIDIC”.

Another was to introduce legal reforms

“Providing the jury committee with either training or selecting those with expertise in all areas of construction”

Another advocated the benefits of more standardised process and certifications *“Issuing a regulation for contractual claims. This should be clear and made public. Support the system with formation of a committee with expertise in the field of disputes... On other hand introduce standardisation in sector. Certifications and licenses to work need to be focused with reformed grading structure. Maybe some training to make utilise modern technology can help too”*

Mediation was considered as the best alternative method that could be used in KSA. Mediation is trying to achieve win-win situation for both parties and try to find quick solution without involving more litigious processes.

The suggestions to have “legal committees, jury committees, expert bodies or dispute resolution boards”, aim at establishing some form of legal support system that can focus primarily of construction disputes and claim resolutions for quick decisions.

This also highlighted the need to “train” the judicial bodies in ADR methods and construction sector processes for better understanding. The education about construction sector working can increase collaboration.

ADR method suitable for KSA	% Frequency
Mediation	35%

Modify contract and add clauses for ADR	20%
Train judiciary on the construction industry and its conflicts	20%
Dispute resolution boards	20%
Negotiation	10%
Support court system with ADR	10%
Arbitration	10%
Regularise the contractual claim process.	10%
Compulsory professional certification and licenses to work	10%
Conciliation	5%

Table 7-10 Ranking of ADR methods considered suitable for KSA

To understand and align the suggestion of respondents for making improvements, the answers were divided into three broad categories as per the frequency with which they were mentioned, representing the suggestions that should be taken forward:

- Amend claim settlement process (53%)
- Introduce regulatory procedures (27%)
- Reform legal system (20%)

Each category was broken down to clarify the suggestive options – see Figure 7-17, Figure 7-18 and Figure 7-19.

The dominant suggestion was to train the judicial system. This points at the knowledge gap that makes the process lengthy and tedious. The understanding of construction sector working will help in quick decision making. ADRs are more flexible and less time taking. But this needs awareness and education programs to make people adopt them in KSA.

The respondents stressed upon alternative ways that are more flexible and robust. This needs training of mediators and the process to make the parties feel comfortable to approach such bodies. The fear of decision binding is most dominant in KSA. This again needs education and awareness and proper legal framework to raise confidence of parties in such alternative systems.

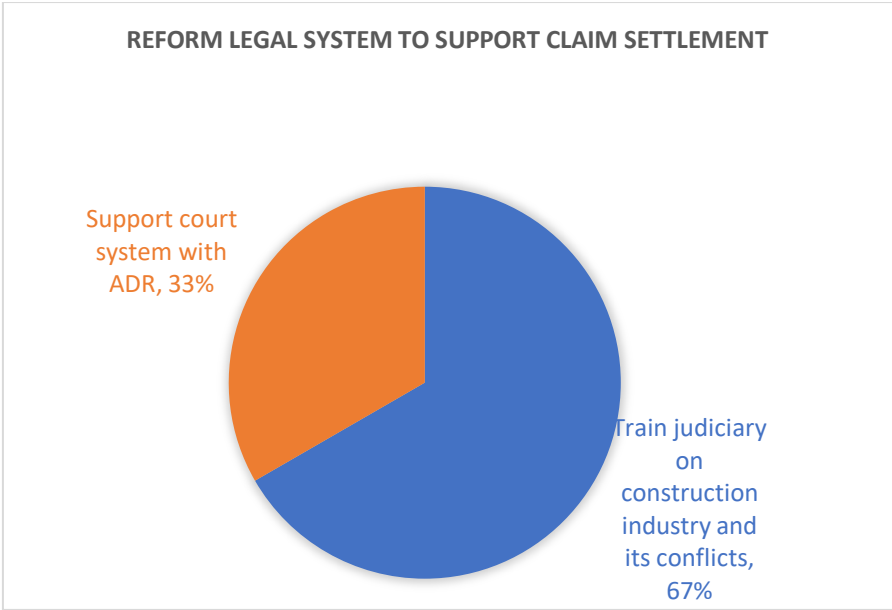


Figure 7-17 The coded answers within reform legal system category

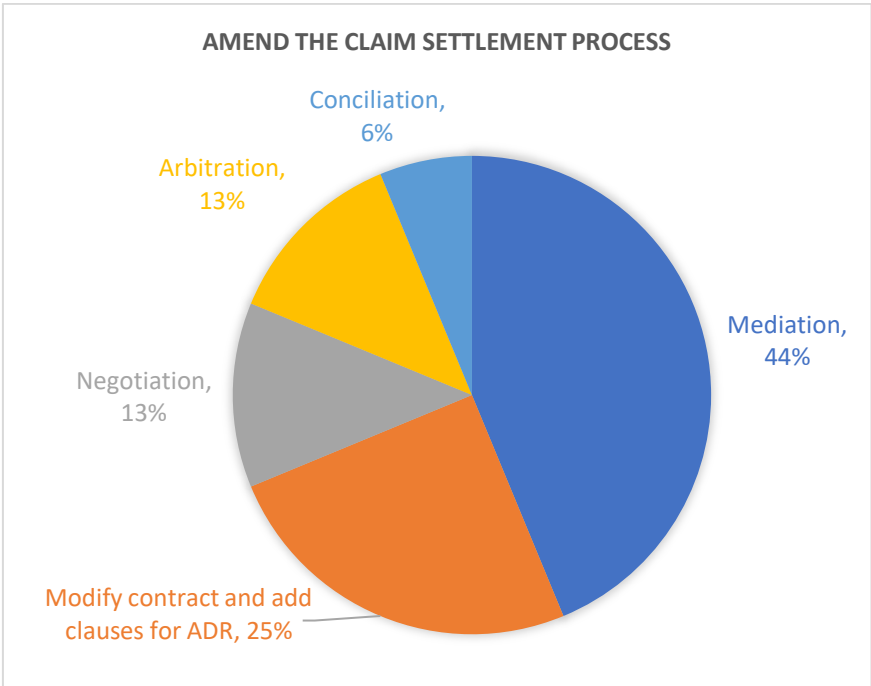


Figure 7-18 The coded answers within amend claim settlement process category

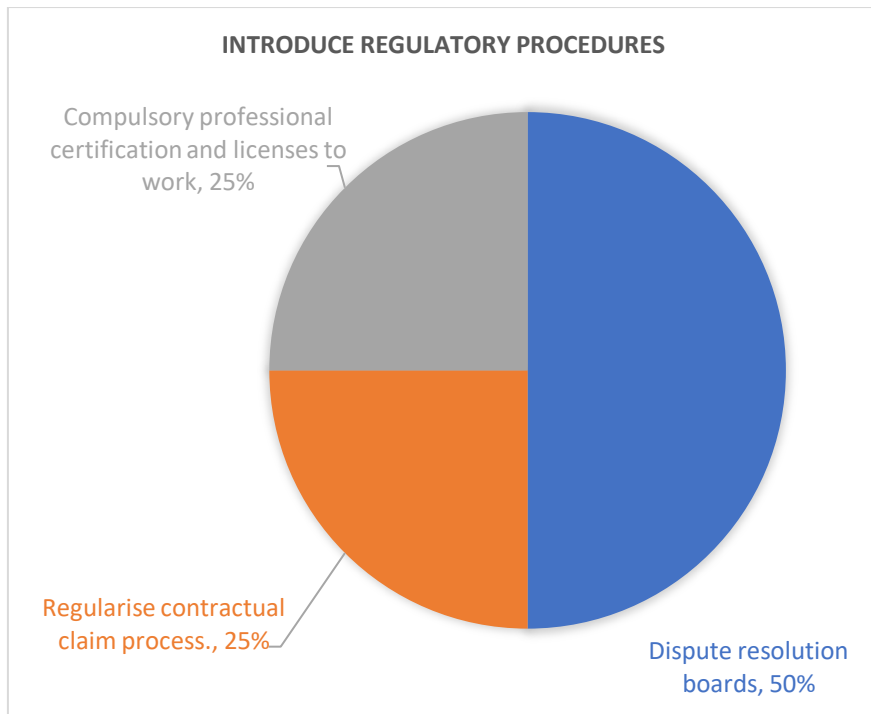


Figure 7-19 The coded answers within introduce regulatory procedures category

Settlement is not giving up. It is about evaluating the situation. Regulating the settlement procedure will help in understanding the requirements to support claim process. This needs technological training and adoptability too. The broader construction sector reforms can introduce certifications and training in modern fields of management as well as tools to be used. The grading system can refine the available contractors' pools to work with but with more rigorous license programmes. The alternative systems with flexibility need to be advocated more to make parties understand the betterment it offers to them.

This gives a brief and clear view of suggestions that should be focused in KSA to mitigate the claim settlement process in form of best code of best practice.

7.7 Findings:

The analysis helped to identify the core problem areas and the factors associated with them. The construction phase is the most problematic amongst the four stages (pre-tender, contract formulation, construction, and post completion) generating a lot of problems that hinder the project. The dominant factors to this issue are categorised into four core areas.

1. Project Management and Control (PMC).

2. Changes (design, scope, requirements, laws, variation orders, mostly associated with tendering process/pre-construction phases) (C).
3. Behavioural aspects (Ways to handle dispute when arise, attitude and power dynamics) (BA).
4. Skill Force (SF).

The issues that arise at the construction phase are linked to the pre-construction phase. The inefficiencies of the design process create problems in the implementation stage of the project. The interrelationship between the site production activities and the dependence on the pre-construction phase make the process complex.

The improvements suggested for the design process, procurement system and site production focused on better design tools, bid document preparation and construction plan, the selection of contractor based on expertise and management and planning activities through improved IT tools.

It was suggested that the negative impact of the role of bureaucracy could/should be reformed in two broad areas:

1. Reform processes
2. Reform construction sector

The foundational aspects for building better practices for claim settlement were the suggestions regarding the claim settlements process that is being followed in KSA. The suggestions by respondents for much-needed improvements were grouped as follows:

1. Develop claim management process that recognises the issues that will influence the process
2. Claim submission and evaluation
3. Focus on ADR methods
4. Judicial Training

The barriers to adoption and change in KSA are associated with the attitude of the people. Limited options available in procurement law and lack of legislative framework and expertise in conflict management are also mentioned.

The findings also suggested ways to improve the settlement process. The recommendations were categorised into the following groups.

1. Amend claim settlement process
2. Introduce regulatory procedures
3. Reform legal system.

The basic purpose of the interview was to build the As-it-is claim resolution process. This will help in laying down the to-be claim resolution alternatives. The analysis revealed the shortcomings in the present system, the barriers, and the changes needed to make the process efficient. The findings helped to establish the next steps in this research:

1. As-it-is claim resolution process
2. Interrelationship and interdependence system diagram
3. Design the second questionnaire
4. Develop a conceptual framework

The analysis helped in understanding the relationship and the interdependence between the processes. These will be reflected in the system diagram that will show the complexity of the system.

The conceptual framework will reflect the structure focusing on key problem areas (as identified by the analysis), processes, their interrelationship and interdependence (as reflected in the interrelationship diagram). The identified alternatives and improvement/recommendation will be tested against the hindering processes and the loopholes identified by the analysis of the interview.

The identified categories of issues, suggestions and measures from respondent's answers were used to design the second survey questionnaire. The purpose of this survey is to get feedback from the respondents regarding options, suggestions, and improvements in the present system (as-it-is) and codify the code of best practices (to-be). Furthermore, the second questionnaire will help to identify the measures and strategies to be adopted in the areas identified as problematic in the process.

7.8 Summary:

The analysis helped in identifying major issues, suggestions for improvements and measures that respondents think are relevant to be considered for mitigating claims settlement process in

KSA. This will further be utilised in designing the survey questionnaire for collecting respondent's view on recommendation categories. It will also be used to understand the relationship and the interdependence between the processes that will be reflected in system diagram showing the complexity.

CHAPTER 8: QUANTITATIVE DATA AND ANALYSIS: (SURVEY QUESTIONNAIRE)

8.1 Introduction:

The chapter will discuss the second data collection method and its analysis for primary data. As research adopted mixed methodology, the second round of quantitative data collection was planned through survey questionnaire. The analysis will also be discussed to categories and rank important factors for improvements and recommendations. This will be used to populate the conceptual framework developed before to present the code of best practices.

8.2 Analysis of second survey questionnaire:

The second survey questionnaire was designed to ascertain the practitioners' views by focusing on the areas identified through the first round of interviews, which led to developing the conceptual framework and designing the second questionnaire.

The second survey questionnaire was divided into various sections which capture different aspects of the claim settlement process. The first section covered respondents' demographic and professional experience. The second section focussed on the major effects of claims on projects. The third section covers reasons for claims and looked at claim occurrences and causes in KSA. Finally, the section focused on different aspects of operations and actors that are involved in the process to understand the loopholes.

The fourth section was about the methods of claim settlements procedures adopted by KSA, while the last section focused on recommendations regarding the problems identified in the first interactions with the experts. It tries linking data to "improvement measures" for claim settlement that could be considered in KSA.

The survey questionnaire ranked the options regarding their importance from most important to least important using the Likert scale. Recommendations were ranked on the option of preference from 'definitely' to 'never'. At the same time, they were 'ranked on a scale of five based on the ease of implementation concerning KSA from 'very easy' to 'very difficult'.

Ranking-order questions were also used to rank the most critical factor to gauge different aspects of the main research question.

The data collected was analysed through different statistical measures; the relative importance index, frequency distribution and overall weight of the answers were calculated to compare different factors and build a better idea of the issues.

The factors associated with the causes were grouped, and respondents were asked to rank which of the factors are most damaging or the originators of conflicts/issues.

8.3 Section two: Claims in Saudi construction projects:

Twenty per cent of the respondents strongly agreed that construction claims because serious difficulties in KSA projects, whereas seventy per cent merely agreed on the proposition – see Figure 8-1.

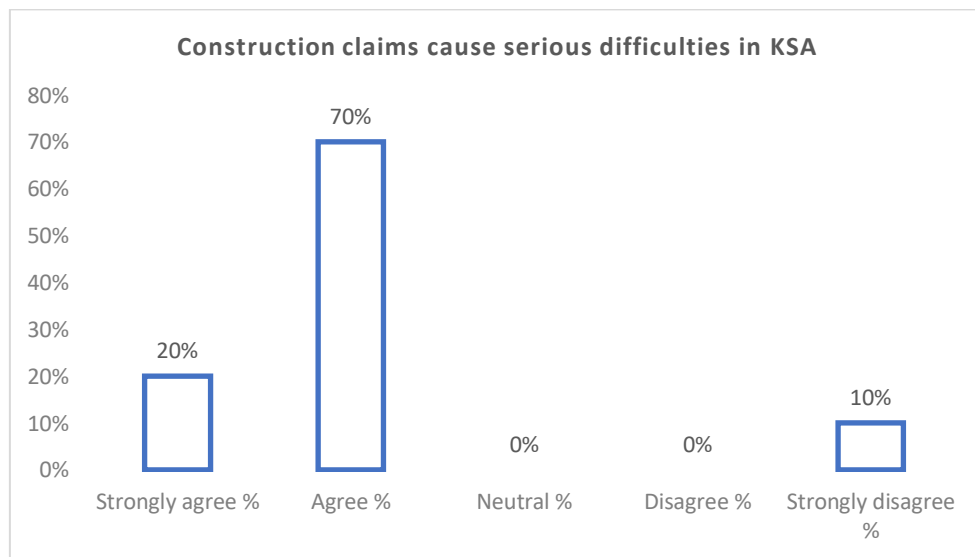


Figure 8-1 Respondents' views on the impact of construction claims

8.3.1 Effects of Claims:

Claims negatively affect the completion of the project, cost/budget of the project, and project quality. Therefore, respondents were asked to scale their opinion on a five-point Likert scale from strongly agree to strongly disagree on the effects of claims across three parameters, time, cost and quality

Around thirty percent of respondents strongly agreed, sixty percent agreed that the claims negatively affected time, while ten percent disagreed – see Figure 8-2.

Similarly, seventy percent think that claim affects negatively on the cost of the project. Twenty percent have strongly opinionated on the negative effects of cost claims. Only ten percent disagreed

With reference to quality, seventy percent think that a claim negatively affects a project, whereas ten percent strongly agreed. Ten percent did not agree and strongly disagreed with the proposition.

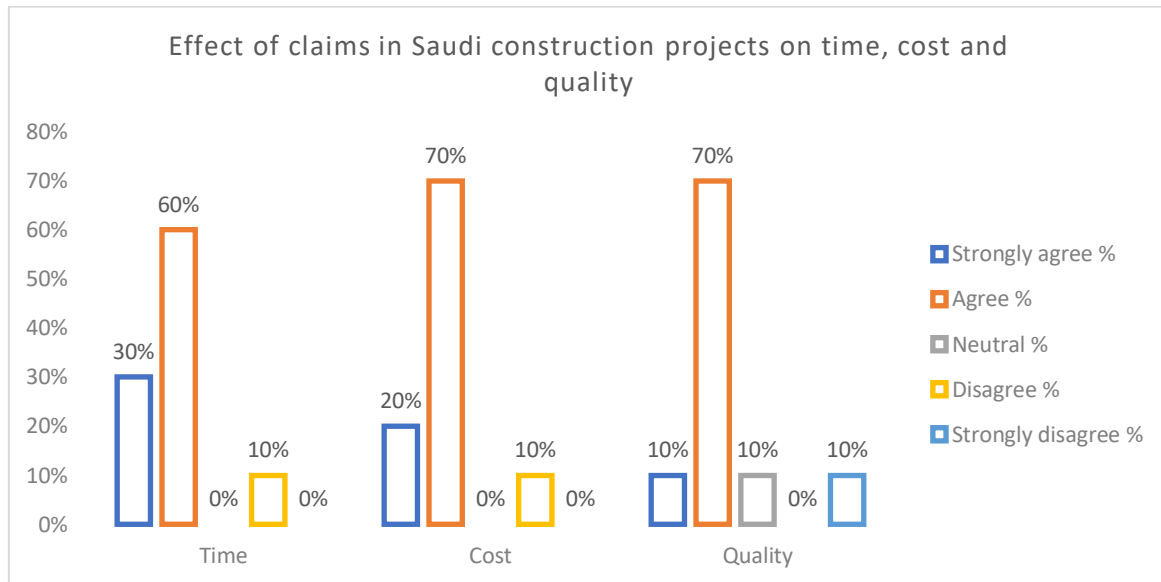


Figure 8-2 Respondents' view on the effect of claims on time, cost and quality

8.4 Section Three: Reasons for claims:

The section focused on highlighting the specific areas in the broader categories of causes. The causes/reasons were divided into eight major broader categories:

1. Financial issues
2. Contract related issues.
3. Owner related issues.
4. Design process-related issues.
5. Behaviour related issues.
6. Contractor related issues.
7. Project implementation-related issues.
8. External issues

These categories were divided further into factors associated with causes and difficulties being faced by the project as identified previously in the literature and through the first round of interviews. Each category was divided into relevant factors. The respondents were asked to first select one factor they thought are most damaging or plays the most critical role in the claim

occurrences. The second question was to rank the factors in order of their importance from most relevant to least relevant in terms of their role in claim occurrences

8.4.1 Financial factors:

The issues that were identified under the financial causes are:

- Late payment
- Inadequate financial planning for the project.
- The increased price of the materials
- Delay in approval of payment certifications
- Delay invoices
- Miscalculation of the budget in the first place

Respondents were asked to select the most critical factors amongst these and then rank them from most relevant to least relevant in terms of their respective roles in claim occurrences – see Figure 8-3.

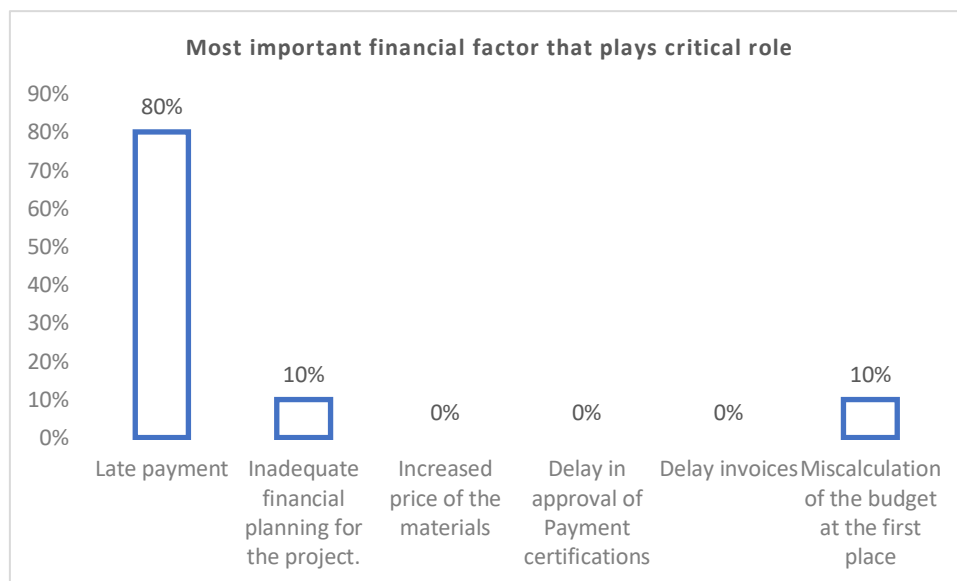


Figure 8-3 The most important financial factor that plays a critical role in the claims process

The most important factor highlighted by the responses is late payment. The other two factors mentioned that had a low percentage were "inadequate financial planning for the project" and the "miscalculation of the budget in the first place".

The rank order questions let respondents rank the given options or suggestions. The Frequency distribution of each option showed the number of respondents giving which rank

to that option (how many respondents given the option rank 1, how many given it rank 2 and so on). Rank 1 was interpreted as highest rank. Rank T as lowest (T is the number of options).

The ranked order analysis was important to understand how many respondents placed each of the factors mentioned above at what rank. In addition, a frequency distribution was important to establish the ranking of these factors see Table 8-1 and Figure 8-4

Frequency distribution of the financial factors					
<i>Late payment</i>			<i>Inadequate financial planning for the project.</i>		
	<i>frequency</i>	<i>Percent</i>		<i>Frequency</i>	<i>percent</i>
Rank 1	9	90.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	1	10.0
Rank 3	0	0.0	Rank 3	0	0.0
Rank 4	1	10.0	Rank 4	4	40.0
Rank 5	0	0.0	Rank 5	2	20.0
Rank 6	0	0.0	Rank 6	3	30.0
	10	100.0		10	100.0
<i>The increased price of the materials</i>			<i>Delay in approval of payment certifications</i>		
	<i>frequency</i>	<i>percent</i>		<i>Frequency</i>	<i>percent</i>
Rank 1	1	10.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	2	20.0
Rank 3	1	10.0	Rank 3	3	30.0
Rank 4	1	10.0	Rank 4	4	40.0
Rank 5	1	10.0	Rank 5	1	10.0
Rank 6	6	60.0	Rank 6	0	0.0
	10	100.0		10	100.0
<i>Delay invoices</i>			<i>Miscalculation of the budget in the first place</i>		
	<i>frequency</i>	<i>percent</i>		<i>Frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	4	40.0	Rank 2	3	30.0
Rank 3	5	50.0	Rank 3	1	10.0
Rank 4	0	0.0	Rank 4	0	0.0
Rank 5	0	0.0	Rank 5	6	60.0
Rank 6	1	10.0	Rank 6	0	0.0
	10	100.0		10	100.0

Table 8-1 The detail of the frequency distribution of the ranking for the finance related factor.

After the frequency distribution, the overall weightage of each factor was calculated.

$$\text{Overall Weightage} = \sum w = T * N_1 + (T-1) * N_2 + (T-2) * N_3 + \dots (T - (T-1)) * N_T.$$

Where w is the weightage given to each factor by respondents.

T = No of options = Highest weight.

Rank given to each option ranging from 1 to T.

Where 1 is the highest rank and T is the lowest rank (dependent on number of options given to respondents, for example if 7 options given then T = 7)

N₁ = number of respondents for rank 1 to the option,

N₂ = number of respondents for rank 2 to the option,

To

N_T = number of respondents given rank T to the option.

Whereas Rank 1 option will have highest weight (dependent on the number of suggestions provided to respondents to be ranked (If T= 7 then highest weight will be 7))

The overall weightage (score) was used to rank the options given to the respondents from the highest to lowest.

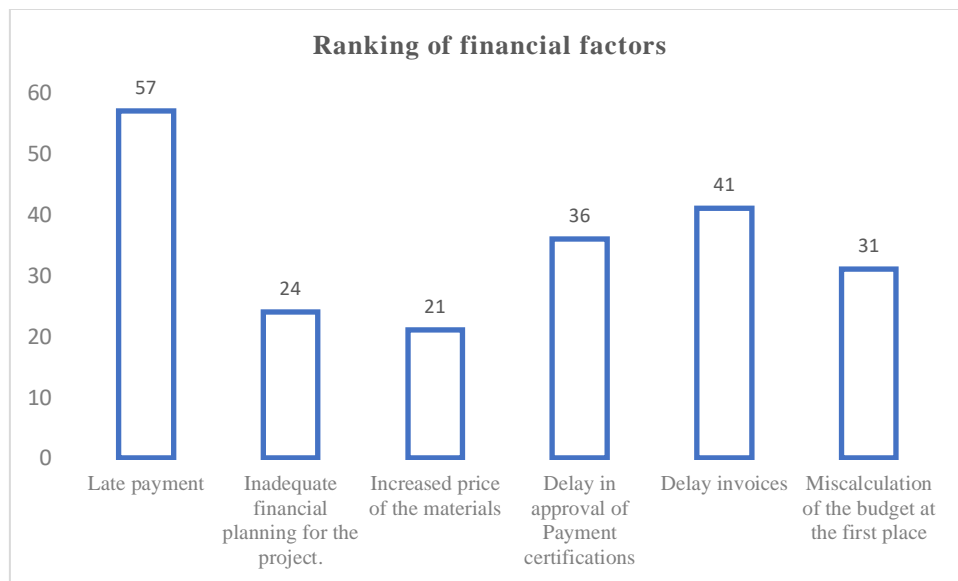


Figure 8-4 The ranking of the financial factors (overall weightage/score)

Late payment is the topmost important factor in the list, followed closely by "Delay invoices". The third-ranked factor is "Delay in approval of payment certifications".

8.4.2 Contract related factors:

The issues identified under the contract related factors were:

- Ambiguous/unclear contractual document

- Poor contract management practices
- Inadequate use of the contract.
- The standard form of contract used is not appropriate for modern industrial needs.

The respondents were asked to rank the most critical contract-related issue from most important to least important under this category – see Figure 8-5

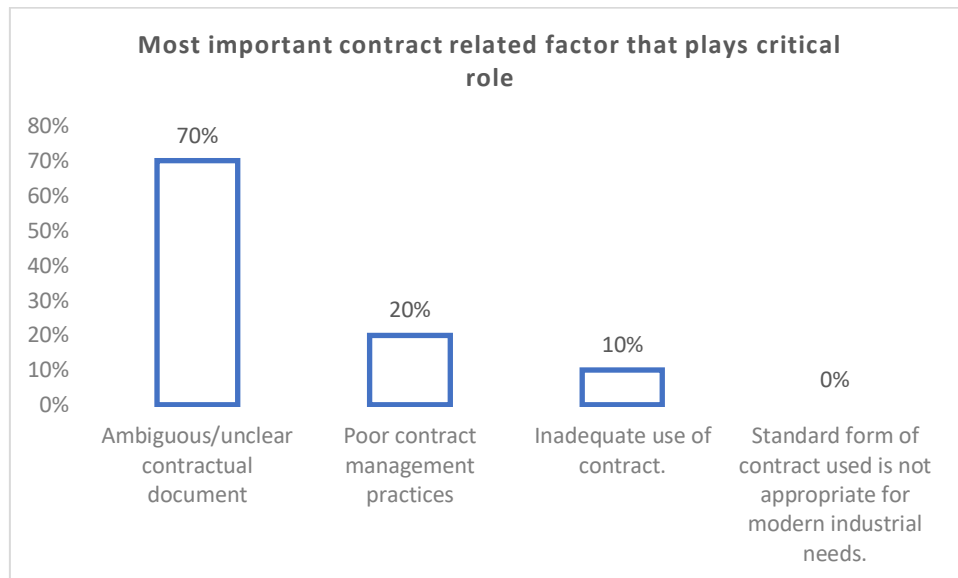


Figure 8-5 The most important contract related factor that plays a critical role in the claims process

Seventy percent of the respondents selected "Ambiguous/unclear contractual document" as the most important factor with the second and third mentioned factors as "Poor contract management practices" and "Inadequate use of contract" with twenty percent and ten percent respectively.

The frequency distribution of the contract-related factors highlights the number of respondents placing each of the factors mentioned above and at what rank – see Table 8-2.

The overall weightage (score) was then calculated for each of the factor to rank them from highest to lowest importance. The analysis of the rank orders (overall weightage/score) established "Ambiguous/unclear contractual document" as the most weighted factor, followed by "Poor contract management practices" and "Inadequate use of contract" - see Figure 8-6.

Frequency distribution of the contract-related factor					
<i>Ambiguous/unclear contractual document</i>			<i>Poor contract management practices</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	7	70.0	Rank 1	3	30.0
Rank 2	2	20.0	Rank 2	5	50.0

Rank 3	1	10.0	Rank 3	2	20.0
Rank 4	0	0.0	Rank 4	0	0.0
	10	100.0		10	100.0
<i>Inadequate use of the contract.</i>			<i>The standard form of contract used is not appropriate for modern industrial needs.</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	2	20.0	Rank 2	1	10.0
Rank 3	7	70.0	Rank 3	0	0.0
Rank 4	1	10.0	Rank 4	9	90.0
	10	100.0		10	100.0

Table 8-2 The detail of the frequency distribution of the ranking for the contract related factor

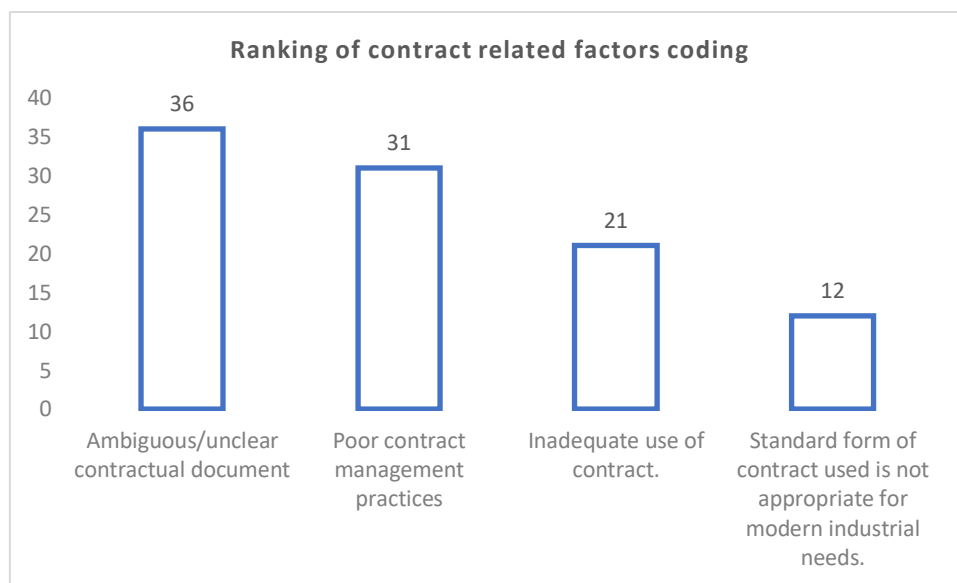


Figure 8-6 The ranking of the contract related factors (overall weightage/score)

8.4.3 Client-related factors:

The factors that were identified under the client-related category were:

- Unclear, ambiguous requirements
- No proper documentation of changes demanded
- Communication issues between contractor and client
- Non-involvement of the client at the design stage
- Change orders
- Contract entitlement issues
- Conflict of interest and behavioural barriers between contractor and client.

The most important client-related factor was "Change orders", chosen by sixty percent of respondents. Second was "unclear ambiguous requirements" with thirty percent, while a mere ten percent selected "no proper documentation of changes demanded" as a critical claim occurrence factor see Figure 8-7.

The frequency distribution shown in Table 8-3 highlights the number of respondents placing each of the factors mentioned above at what rank.

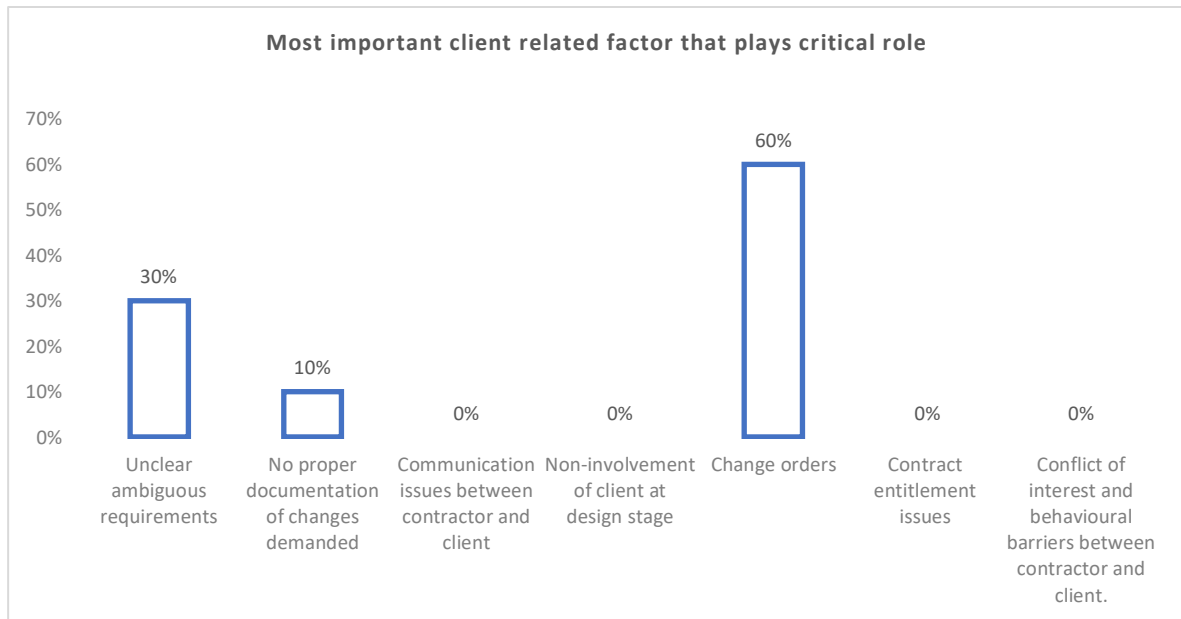


Figure 8-7 The most important client related factor that plays a critical role in the claims process

The overall weightage (score) calculated for the factors with regard to the ranks given to each of them from every respondent were then used to rank the factors that are most important to least important.

Frequency distribution of the client-related factors					
<i>Unclear, ambiguous requirements</i>			<i>No proper documentation of changes demanded</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	3	30.0	Rank 1	0	0.0
Rank 2	4	40.0	Rank 2	3	30.0
Rank 3	2	20.0	Rank 3	4	40.0
Rank 4	0	0.0	Rank 4	3	30.0
Rank 5	0	0.0	Rank 5	0	0.0
Rank 6	0	0.0	Rank 6	0	0.0
Rank 7	1	10.0	Rank 7	0	0.0
	10	100.0		10	100.0

<i>Communication issues between contractor and client</i>			<i>Non-involvement of the client at the design stage</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	1	10.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	0	0.0
Rank 3	0	0.0	Rank 3	0	0.0
Rank 4	3	30.0	Rank 4	1	10.0
Rank 5	0	0.0	Rank 5	5	50.0
Rank 6	6	60.0	Rank 6	4	40.0
Rank 7	0	0.0	Rank 7	0	0.0
	10	100.0		10	100.0
<i>Change orders</i>			<i>Contract entitlement issues</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	6	60.0	Rank 1	0	0.0
Rank 2	3	30.0	Rank 2	0	0.0
Rank 3	0	0.0	Rank 3	2	20.0
Rank 4	1	10.0	Rank 4	2	20.0
Rank 5	0	0.0	Rank 5	5	50.0
Rank 6	0	0.0	Rank 6	0	0.0
Rank 7	0	0.0	Rank 7	1	10.0
	10	100.0		10	100.0
<i>Conflict of interest and behavioural barriers between contractor and client.</i>					
	<i>frequency</i>	<i>percent</i>			
Rank 1	0	0.0			
Rank 2	0	0.0			
Rank 3	2	20.0			
Rank 4	0	0.0			
Rank 5	0	0.0			
Rank 6	0	0.0			
Rank 7	8	80.0			
	10	100.0			

Table 8-3 The detail of the frequency distribution of the ranking for the client related factor

In ranking the factors, "change orders" has the maximum weightage, followed by "unclear, ambiguous requirements" and "no proper documentation of changes demanded" - see Figure 8-8.

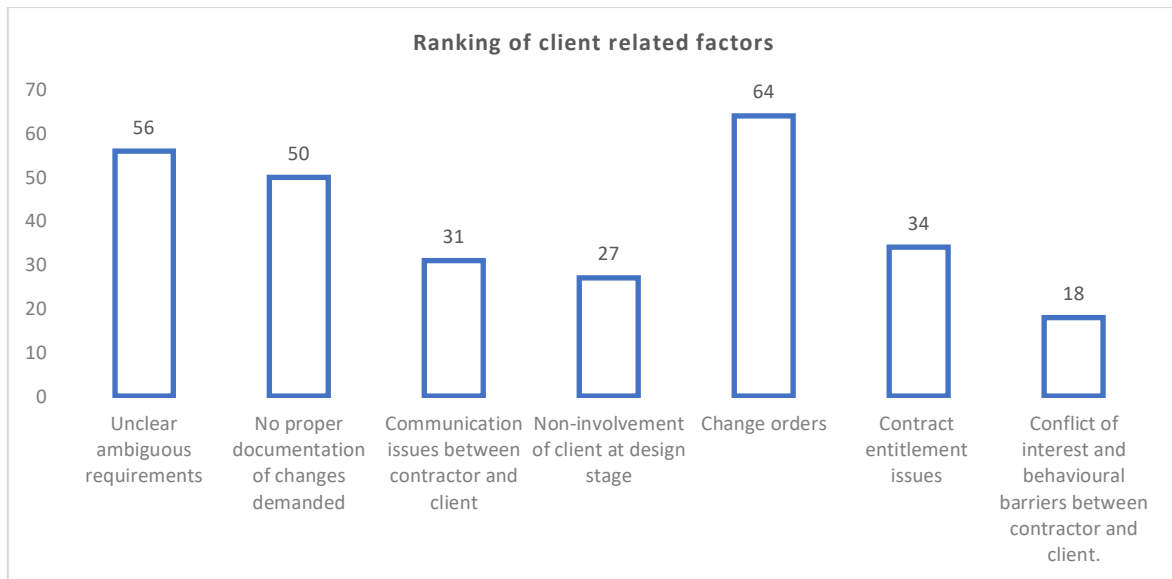


Figure 8-8 The ranking of the client related factors (overall weightage/score)

8.4.4 Design-related factors:

The issues identified under this category and ranked by the respondents were:

- Incomplete/inaccurate design
- Inadequate scope of work/specifications
- Change requirements by owners
- Incomplete assessments
- Design errors
- Unrealistic time frame

"Inadequate scope of work/specifications" was ranked as the most critical factor by fifty percent of the respondents. Thirty percent thought that "design errors" are more critical and cause serious issues raising conflicts later in the construction stages – see Figure 8-9.

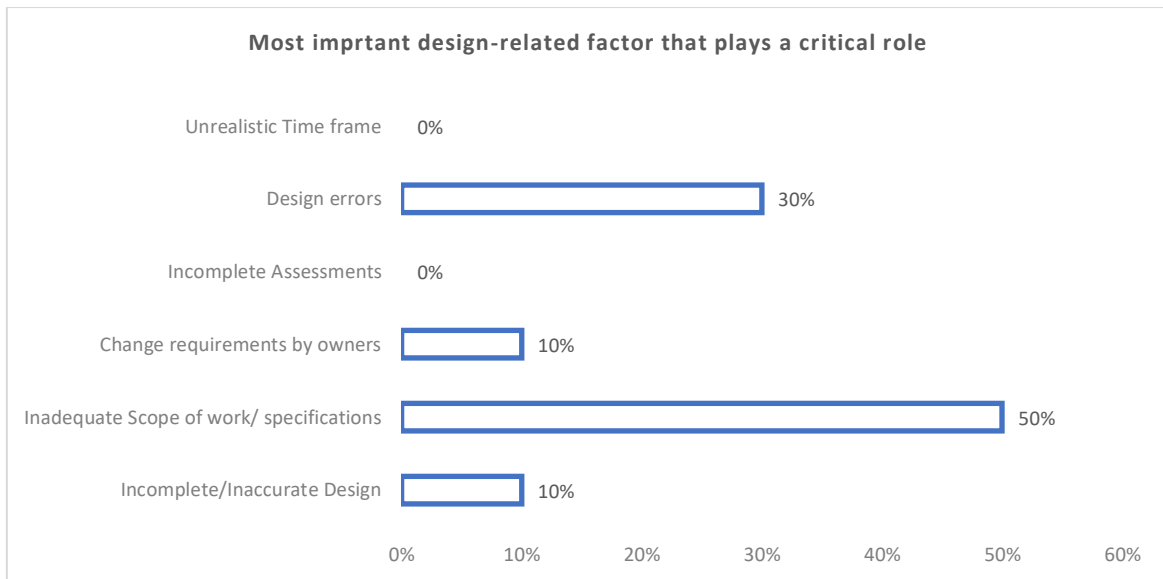


Figure 8-9 The most important design related factor that plays a critical role in the claims process

The frequency distribution of the design-related factors is shown in Table 8-4. It helps understand which of the factors mentioned above were ranked high by the respondents and what rank was given to each of them to interpret the total weightage.

The overall ranking showed "Inadequate Scope of work/specifications" as a most weighted factor by the respondents. However, the second most weighted factor is "change requirements by owners", highlighting the issue of changes instituted after the awarding of the contract.

"Design errors" are third, while "Incomplete/inaccurate design" are also weighted quite high. The "design error" and "incomplete or inaccurate design" are interconnected and brought forward the issue as a high-ranking factor (see Figure 8-10),

Frequency Distribution of the design-related factors					
<i>Incomplete/Inaccurate Design</i>			<i>Inadequate scope of work/ specifications</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	6	60.0
Rank 2	3	30.0	Rank 2	0	0.0
Rank 3	1	10.0	Rank 3	3	30.0
Rank 4	4	40.0	Rank 4	1	10.0
Rank 5	2	20.0	Rank 5	0	0.0
Rank 6	0	0.0	Rank 6	0	0.0
	10	100.0		10	100.0
<i>Change requirements by owners</i>			<i>Incomplete Assessments</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	1	10.0	Rank 1	0	0.0
Rank 2	6	60.0	Rank 2	0	0.0

Rank 3	2	20.0	Rank 3	0	0.0
Rank 4	1	10.0	Rank 4	0	0.0
Rank 5	0	0.0	Rank 5	4	40.0
Rank 6	0	0.0	Rank 6	6	60.0
	10	100.0		10	100.0
Design errors			Unrealistic Time frame		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	3	30.0	Rank 1	0	0.0
Rank 2	1	10.0	Rank 2	0	0.0
Rank 3	2	20.0	Rank 3	2	20.0
Rank 4	1	10.0	Rank 4	3	30.0
Rank 5	3	30.0	Rank 5	1	10.0
Rank 6	0	0.0	Rank 6	4	40.0
	10	100.0		10	100.0

Table 8-4 The detail of the frequency distribution of the ranking for the design related factors.

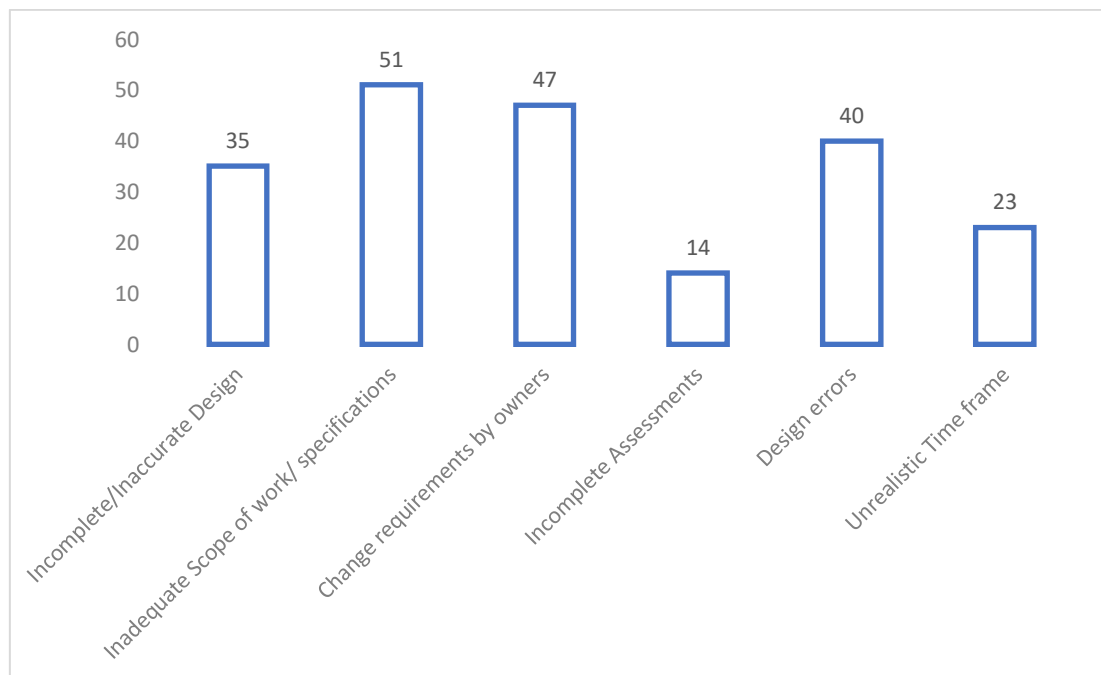


Figure 8-10 The ranking of the design related factors (overall weightage/score)

8.4.5 Behaviour-related factors:

The identified factors related to behaviour are:

- Lack of professional behaviour
- Poor communication
- Lack of motivation.
- Failures in quick decision making.

- Intent to resolve conflicts/disputes.
- Lack of teamwork and collaboration
- Fear of loss or getting disadvantage

The two most important factors highlighted by respondents were the "Failures in quick decision making" and "Intent to resolve conflicts/disputes" with forty percent selection each. Whereas twenty percent believed that "Poor communication" is another damaging factor that is critical in the claim occurrences – see Figure 8-11,

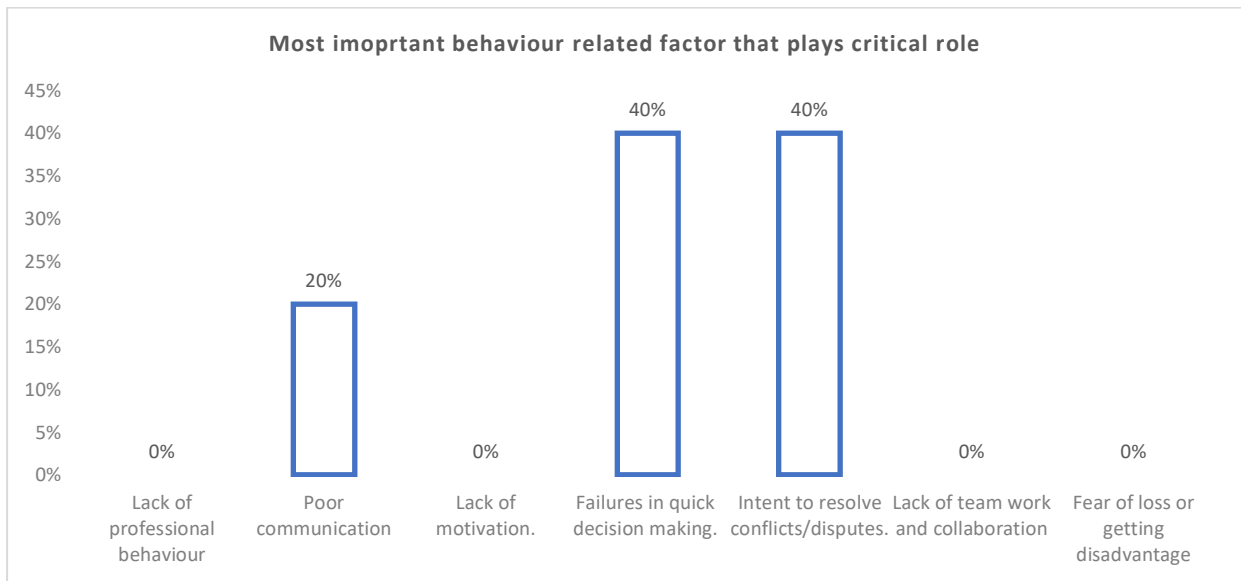


Figure 8-11 The most important behaviour related factor that plays a critical role in the claims process

The frequency distribution of the behaviour related factors is shown in Table 8-5.

Frequency distribution of the behaviour-related factors					
Lack of professional behaviour			Poor communication		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	1	10.0	Rank 1	0	0.0
Rank 2	1	10.0	Rank 2	2	20.0
Rank 3	6	60.0	Rank 3	1	10.0
Rank 4	1	10.0	Rank 4	1	10.0
Rank 5	1	10.0	Rank 5	6	60.0
Rank 6	0	0.0	Rank 6	0	0.0
Rank 7	0	0.0	Rank 7	0	0.0
	10	100.0		10	100.0
Lack of motivation			Failures in quick decision making		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>

Rank 1	0	0.0	Rank 1	5	50.0
Rank 2	0	0.0	Rank 2	5	50.0
Rank 3	0	0.0	Rank 3	0	0.0
Rank 4	0	0.0	Rank 4	0	0.0
Rank 5	0	0.0	Rank 5	0	0.0
Rank 6	2	20.0	Rank 6	0	0.0
Rank 7	8	80.0	Rank 7	0	0.0
	10	100.0		10	100.0
<i>Intent to resolve conflicts/disputes</i>			<i>Lack of teamwork and collaboration</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	4	40.0	Rank 1	0	0.0
Rank 2	1	10.0	Rank 2	0	0.0
Rank 3	2	20.0	Rank 3	1	10.0
Rank 4	0	0.0	Rank 4	6	60.0
Rank 5	0	0.0	Rank 5	3	30.0
Rank 6	1	10.0	Rank 6	0	0.0
Rank 7	2	20.0	Rank 7	0	0.0
	10	100.0		10	100.0
<i>Fear of loss or getting disadvantage</i>					
	<i>frequency</i>	<i>percent</i>			
Rank 1	0	0.0			
Rank 2	1	10.0			
Rank 3	0	0.0			
Rank 4	2	20.0			
Rank 5	0	0.0			
Rank 6	7	70.0			
Rank 7	0	0.0			
	10	100.0			

Table 8-5 The detail of the frequency distribution of the ranking for the behaviour-related factor

In the overall ranking of the factors based on their weight, few factors were brought forward as major problem areas by the respondents. "Failures in quick decision making" was ranked as the topmost factor followed by "Lack of professional behaviour". Next was the "Intent to resolve conflicts/disputes", closely followed by the "Lack of teamwork and collaboration" and "poor communication" (see Figure 8-12).

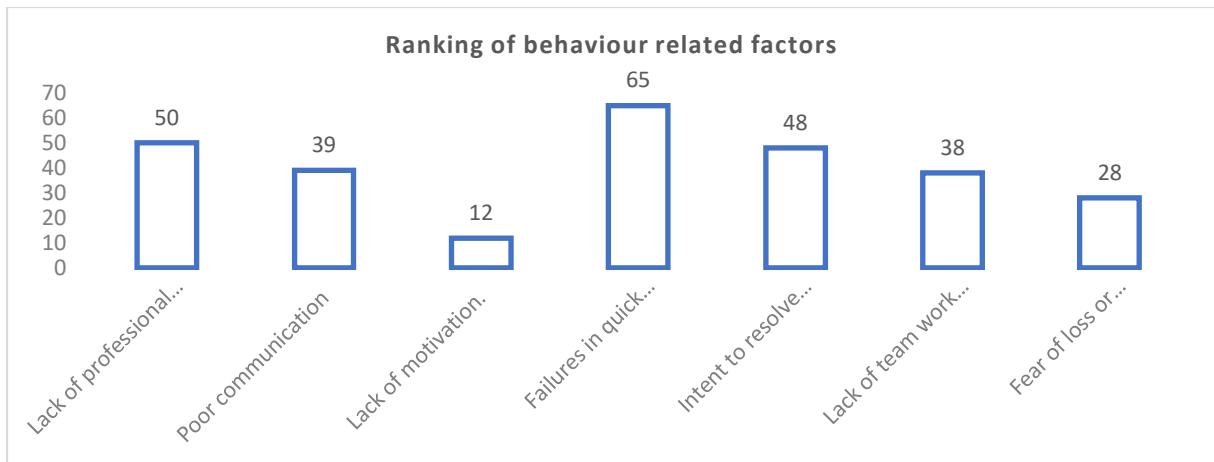


Figure 8-12 The ranking of the behaviour related factors (overall weightage/score)

8.4.6 Contractor-related factors:

The issues under the contractor-related category are:

- Poor project management practices
- Poor monitoring and control as well as quality control practices.
- Poor contract administration practices
- Lack of expertise
- Poor planning affects the implementation phase in a negative way
- Conflict of interest with other stakeholders

"Poor Project management practices" was the most important factor cited by seventy percent of respondents. Thirty percent of respondents thought that "Poor Contract administration practices" are also critical (see Figure 8-13)

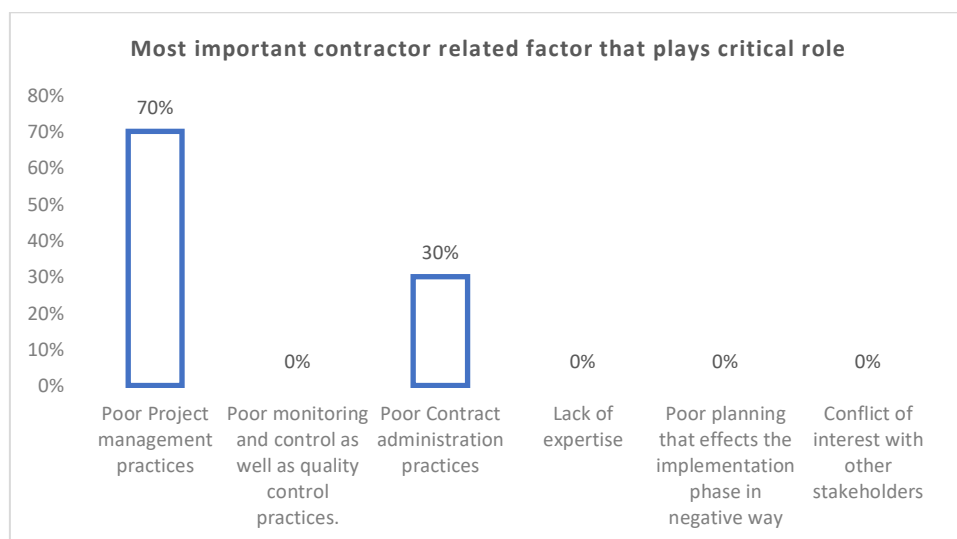


Figure 8-13 The most important contractor related factor that plays a critical role in the claims process

The frequency distribution of the contractor related factors exhibiting the ranking of every factor by each of the respondents is shown in Table 8-6.

The overall ranking based on the score/weightage showed "Poor project management practices" as the most relevant factor in the causes of claims, followed by "Poor contract administration practices". The next two issues were equally weighted - "Poor monitoring and control and quality control practices" and "Lack of expertise" (see Figure 8-14).

Frequency distribution of the contractor-related factors					
<i>Poor Project management practices</i>			<i>Poor monitoring and control as well as quality control practices.</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	6	60.0	Rank 1	0	0.0
Rank 2	3	30.0	Rank 2	1	10.0
Rank 3	0	0.0	Rank 3	4	40.0
Rank 4	0	0.0	Rank 4	4	40.0
Rank 5	0	0.0	Rank 5	1	10.0
Rank 6	1	10.0	Rank 6	0	0.0
	10	100.0		10	100.0
<i>Poor Contract administration practices</i>			<i>Lack of expertise</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	3	30.0	Rank 1	1	10.0
Rank 2	3	30.0	Rank 2	2	20.0
Rank 3	2	20.0	Rank 3	2	20.0
Rank 4	0	0.0	Rank 4	3	30.0
Rank 5	1	10.0	Rank 5	0	0.0
Rank 6	1	10.0	Rank 6	2	20.0
	10	100.0		10	100.0
<i>Poor planning affects the implementation phase in a negative way</i>			<i>Conflict of interest with other stakeholders</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	1	10.0
Rank 3	1	10.0	Rank 3	1	10.0
Rank 4	1	10.0	Rank 4	2	20.0
Rank 5	7	70.0	Rank 5	1	10.0
Rank 6	1	10.0	Rank 6	5	50.0
	10	100.0		10	100.0

Table 8-6 The detail of the frequency distribution of the ranking for the contractor related factors

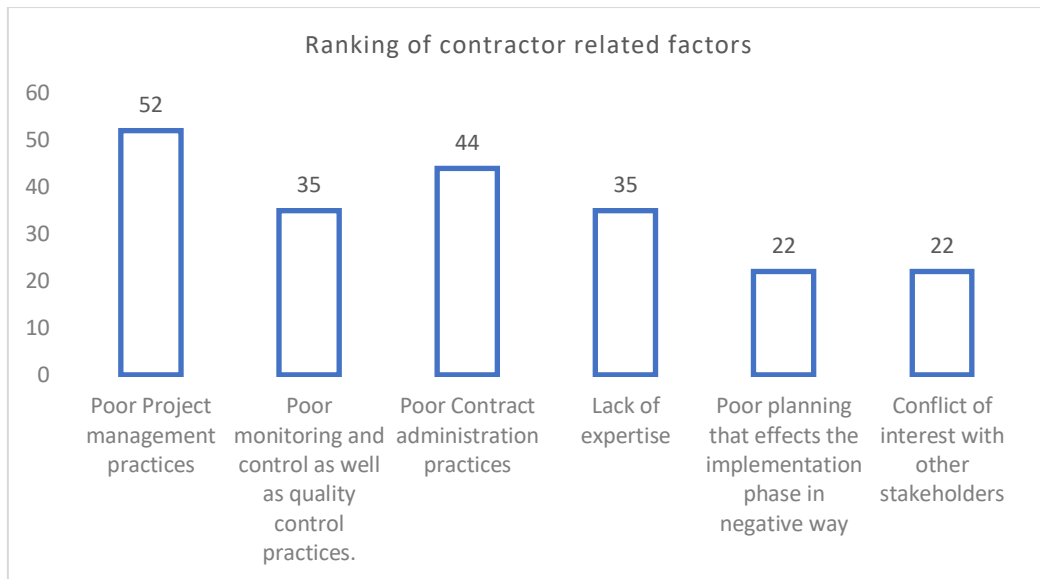


Figure 8-14 The ranking of the contractor related factors (overall weightage/score)

8.4.7 Project implementation-related factors:

The factors identified in the project implementation category are:

- Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)
- Inappropriate programmes.
- External factors (weather conditions, strikes, material scarcity, uncontrollable factors)
- Change orders by clients or Variation orders (changes in the scope of work requested by contractor)
- Scarcity in the skilled labour force
- Poor project planning
- Incompetency in project management

Figure 8-15 shows that seventy percent of the respondents cited "Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)" as the most critical factor.

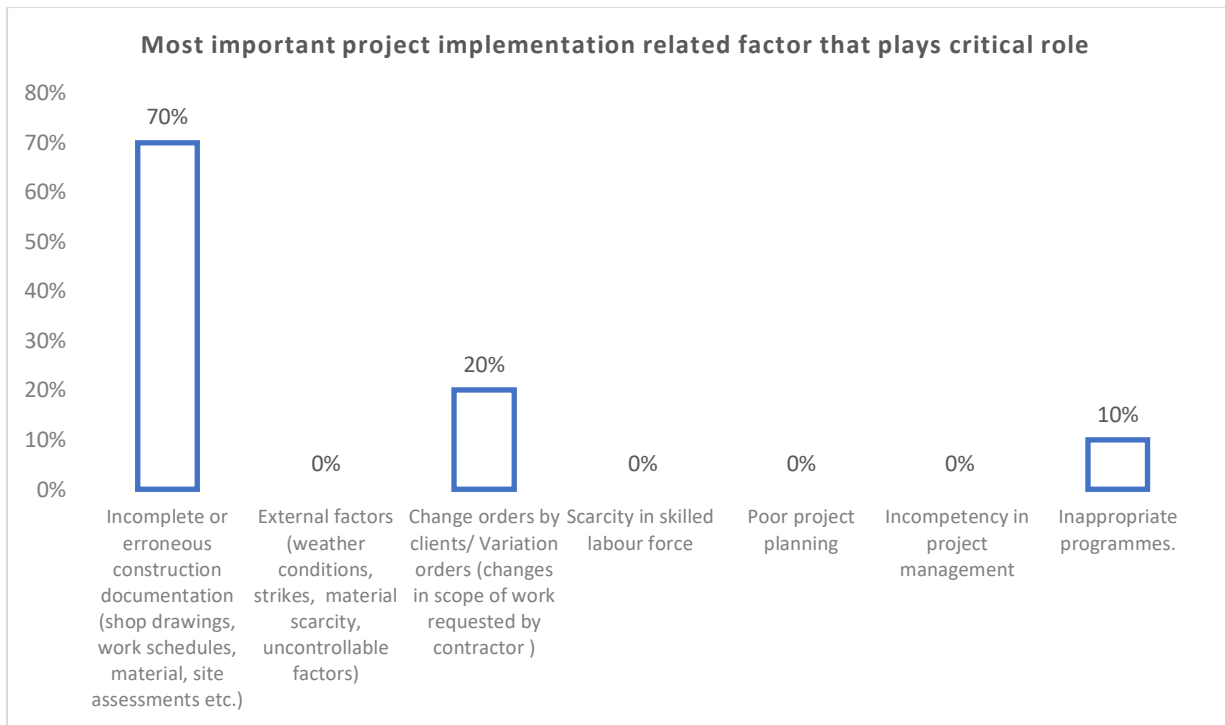


Figure 8-15 The most important project implementation related factor that plays a critical role in the claims process

Twenty percent of the practitioners ranked "Change orders by clients or Variation orders (changes in the scope of work requested by contractor)" as the second most important factor.

The frequency distribution of the project implementation-related factors is shown in Table 8-7. It highlights the rank given to every factor by each of the respondents to establish the overall weight.

Overall, the "Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)" has the highest weight and is ranked first as shown in Figure 8-16. Next is the "Change orders by clients or Variation orders (changes in the scope of work requested by contractor)". There are three factors that are ranked and weighted almost at the same scale that are "Poor project planning", "Scarcity in the skilled labour force", and "Inappropriate programmes".

Frequency distribution of the project implementation-related factors					
<i>Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)</i>			<i>External factors (weather conditions, strikes, material scarcity, uncontrollable factors)</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	7	70.0	Rank 1	0	0.0

Rank 2	1	10.0	Rank 2	0	0.0
Rank 3	2	20.0	Rank 3	0	0.0
Rank 4	0	0.0	Rank 4	1	10.0
Rank 5	0	0.0	Rank 5	1	10.0
Rank 6	0	0.0	Rank 6	1	10.0
Rank 7	0	0.0	Rank 7	7	70.0
	10	100.0		10	100.0
<i>Change orders by clients/ Variation orders (changes in the scope of work requested by contractor)</i>			<i>Scarcity in the skilled labour force</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	3	30.0	Rank 1	0	0.0
Rank 2	6	60.0	Rank 2	2	20.0
Rank 3	1	10.0	Rank 3	1	10.0
Rank 4	0	0.0	Rank 4	2	20.0
Rank 5	0	0.0	Rank 5	0	0.0
Rank 6	0	0.0	Rank 6	5	50.0
Rank 7	0	0.0	Rank 7	0	0.0
	10	100.0		10	100.0
<i>Poor project planning</i>			<i>Incompetency in project management</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	0	0.0
Rank 3	4	40.0	Rank 3	0	0.0
Rank 4	1	10.0	Rank 4	2	20.0
Rank 5	2	20.0	Rank 5	7	70.0
Rank 6	3	30.0	Rank 6	1	10.0
Rank 7	0	0.0	Rank 7	0	0.0
	10	100.0		10	100.0
<i>Inappropriate programmes.</i>					
	<i>frequency</i>	<i>percent</i>			
Rank 1	0	0.0			
Rank 2	1	10.0			
Rank 3	2	20.0			
Rank 4	4	40.0			
Rank 5	0	0.0			
Rank 6	0	0.0			
Rank 7	3	30.0			
	10	100.0			

Table 8-7 The detail of the frequency distribution of the ranking for the project implementation-related factors

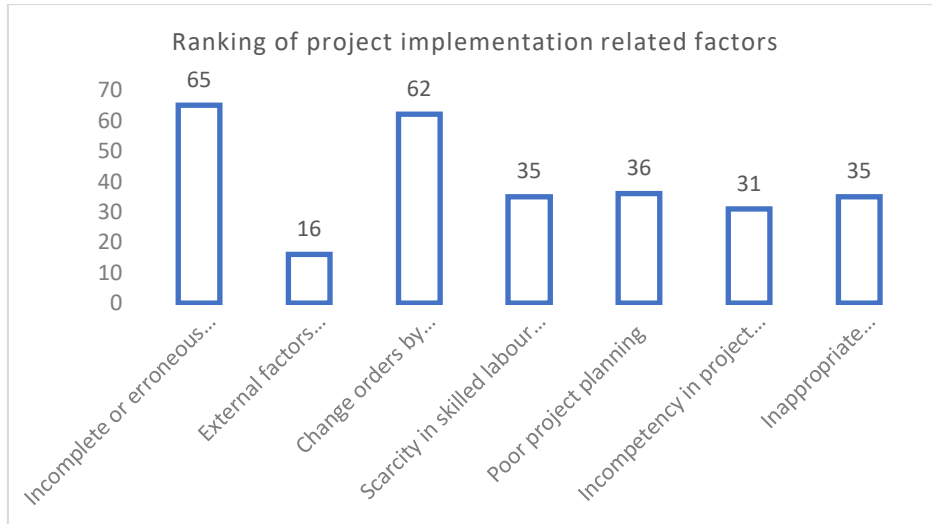


Figure 8-16 The ranking of the project implementation-related factors (overall weightage/score)

8.4.8 External factors:

The most important issues identified under external factors were:

- Unexpected weather conditions
- Strikes
- Changes in Laws or regulations (government level)
- Natural disaster

All the respondents selected "Changes in Laws or regulations (government level)" as the most critical factor – see Figure 8-17.

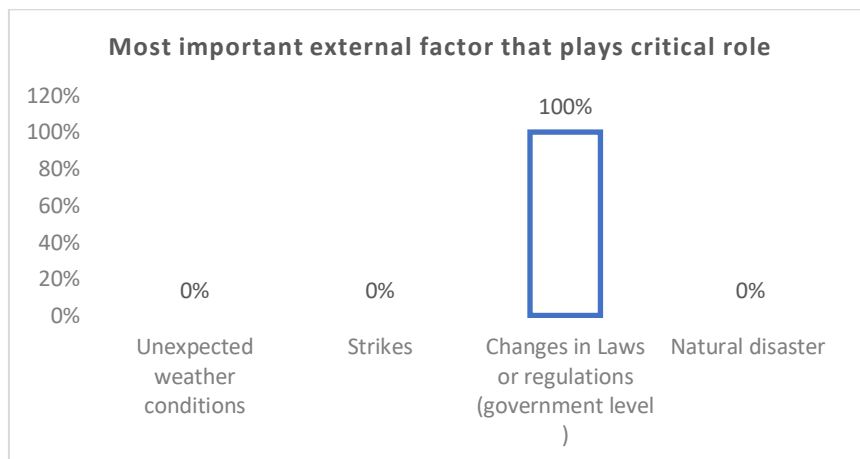


Figure 8-17 The most important external factor that plays a critical role in the claims process

The frequency distribution of the external factors is as follows. See Table 8-8

Frequency distribution of the external factors	
Unexpected weather conditions	Strikes

	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	7	70.0	Rank 2	1	10.0
Rank 3	2	20.0	Rank 3	5	50.0
Rank 4	1	10.0	Rank 4	4	40.0
	10	100.0		10	100.0
Changes in Laws or regulations (government level)			Natural disaster		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	10	100.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	2	20.0
Rank 3	0	0.0	Rank 3	3	30.0
Rank 4	0	0.0	Rank 4	5	50.0
	10	100.0		10	100.0

Table 8-8 The detail of the frequency distribution of the ranking for the external factors

The overall weightage/score was then calculated. The highest weighted factor is the "Changes in Laws or regulations (government level)". Next, is another dominating factor that is "Unexpected weather conditions" (see Figure 8-18).

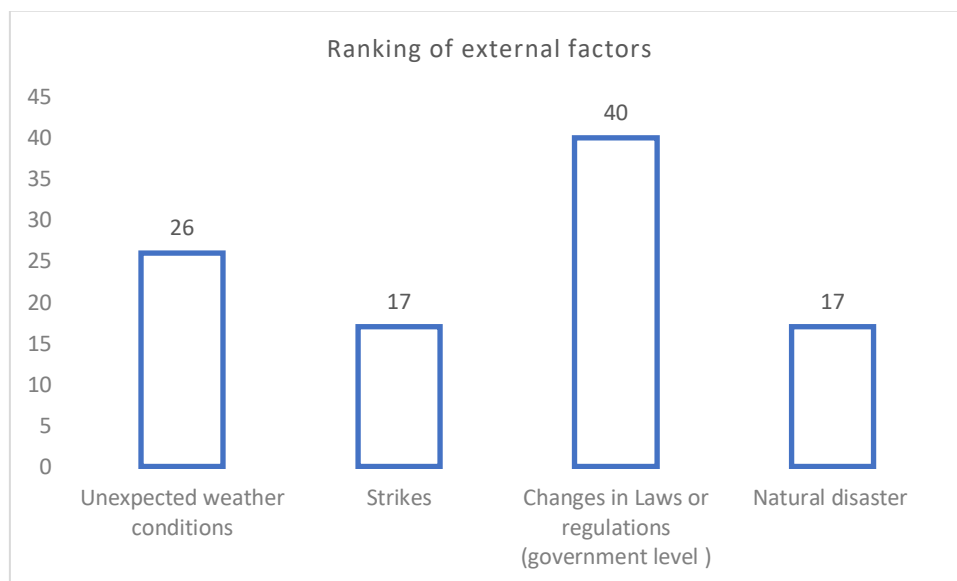


Figure 8-18 The ranking of the external factors (overall weightage/score)

8.4.9 Overall issue ranking:

It is also relevant to identify which of the eight categories is most detrimental and creating obstacles in the progress cycle.

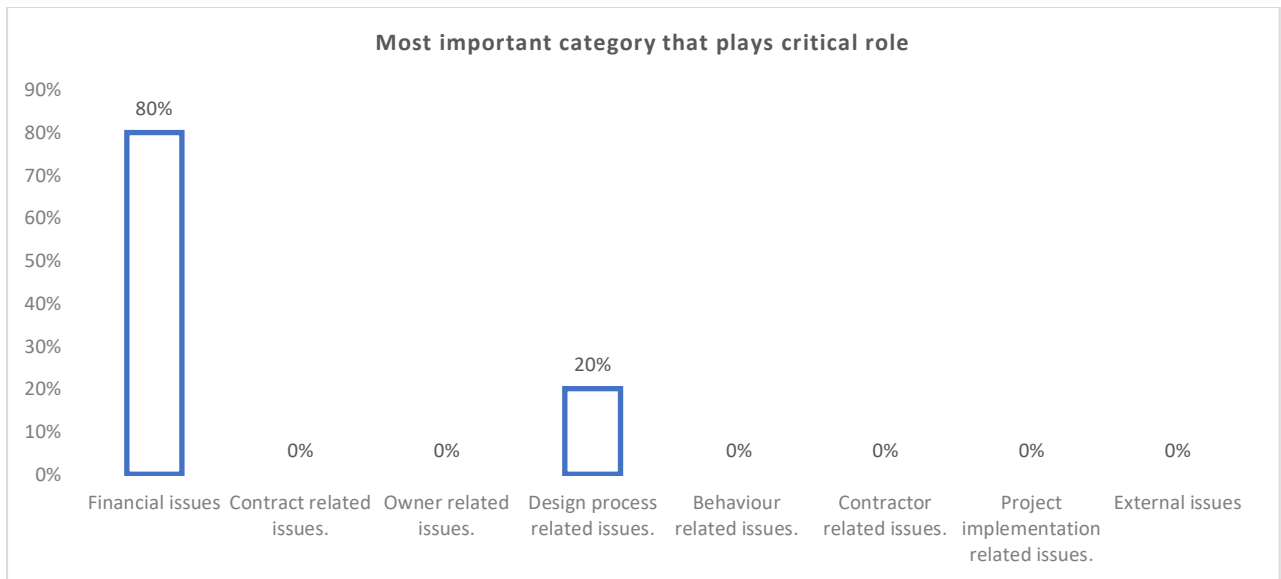


Figure 8-19 The most critical cause category in the claims process

Figure 8-19 shows that the respondents ranked "Financial issues" (80%) as the most critical in claim occurrences of the eight categories. Twenty percent chose "Design process-related issues" as most important.

The frequency distribution of the cause categories is shown in Table 8-9. It is important to understand the rank allocated to each of these categories by each respondent. It will help in establishing the overall weightage and ranking of these broader categories.

Frequency distribution of the cause categories					
<i>Financial issues</i>			<i>Contract related issues.</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	9	90.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	5	50.0
Rank 3	0	0.0	Rank 3	3	30.0
Rank 4	0	0.0	Rank 4	0	0.0
Rank 5	0	0.0	Rank 5	2	20.0
Rank 6	1	10.0	Rank 6	0	0.0
Rank 7	0	0.0	Rank 7	0	0.0
Rank 8	0	0.0	Rank 8	0	0.0
	10	100.0		10	100.0
<i>Owner related issues.</i>			<i>Design process-related issues.</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	0	0.0
Rank 3	1	10.0	Rank 3	3	30.0

Rank 4	0	0.0	Rank 4	2	20.0
Rank 5	2	20.0	Rank 5	1	10.0
Rank 6	6	60.0	Rank 6	1	10.0
Rank 7	1	10.0	Rank 7	2	20.0
Rank 8	0	0.0	Rank 8	1	10.0
	10	100.0		10	100.0
<i>Behaviour related issues.</i>			<i>Contractor related issues.</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	1	10.0	Rank 1	0	0.0
Rank 2	0	0.0	Rank 2	1	10.0
Rank 3	0	0.0	Rank 3	1	10.0
Rank 4	2	20.0	Rank 4	1	10.0
Rank 5	0	0.0	Rank 5	5	50.0
Rank 6	0	0.0	Rank 6	2	20.0
Rank 7	2	20.0	Rank 7	0	0.0
Rank 8	5	50.0	Rank 8	0	0.0
	10	100.0		10	100.0
<i>Project implementation-related issues.</i>			<i>External issues</i>		
	<i>frequency</i>	<i>percent</i>		<i>frequency</i>	<i>percent</i>
Rank 1	0	0.0	Rank 1	0	0.0
Rank 2	3	30.0	Rank 2	1	10.0
Rank 3	2	20.0	Rank 3	0	0.0
Rank 4	5	50.0	Rank 4	0	0.0
Rank 5	0	0.0	Rank 5	0	0.0
Rank 6	0	0.0	Rank 6	0	0.0
Rank 7	0	0.0	Rank 7	5	50.0
Rank 8	0	0.0	Rank 8	4	40.0
	10	100.0		10	100.0

Table 8-9 The detail of the frequency distribution of the ranking for the cause categories

The overall weightage (score) of each cause group was calculated as per the ranking by each respondent. The score was used to rank the categories. The analysis of ranked order again highlighted "Financial issues" as most important. It was followed closely by "Contract related issues". "Project implementation-related issues" was ranked as the third most weighted factor by the respondents. "Design process-related issues" came in fourth place (see Figure 8-20).

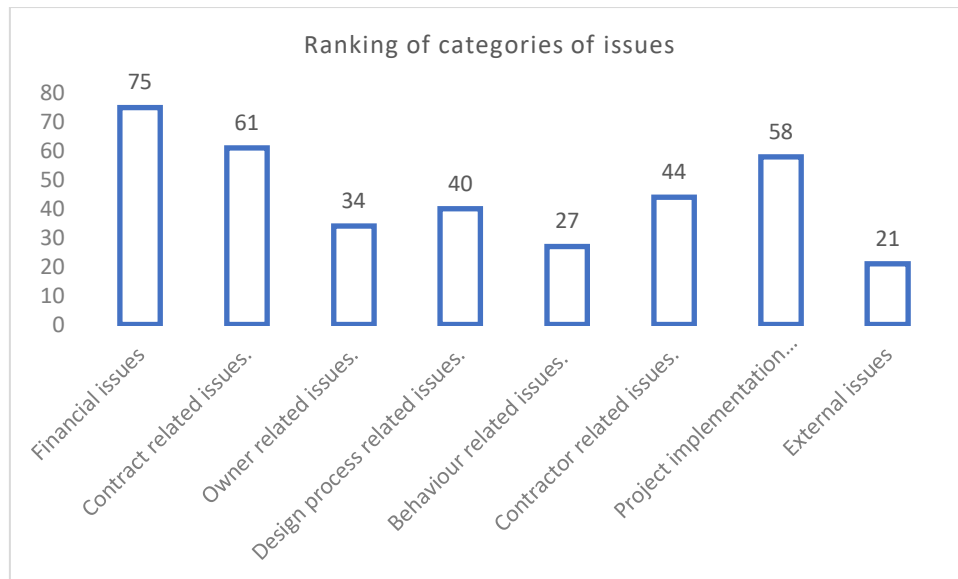


Figure 8-20 The ranking of the cause categories (overall weightage/score)

8.4.10 Summary of the cause factors (total weight and overall rank):

The summary of the forty-seven identified factors under eight categories is shown in Table 8-10. The weightage and overall rank in a respective category are also presented to have a clear idea of important aspects.

No	Cause factors	Total Weight	Overall rank
Financial factors			
1	Late payment	57	1
5	Delay invoices	41	2
4	Delay in approval of payment certifications	36	3
6	Miscalculation of the budget at the first place	31	4
2	Inadequate financial planning for the project.	24	5
3	Increased price of the materials	21	6
Contract-related factors			
7	Ambiguous/unclear contractual document	36	1
8	Poor contract management practices	31	2
9	Inadequate use of contract.	21	3
10	The standard form of contract used is not appropriate for modern industrial needs.	12	4
Client-related factors			
15	Change orders	64	1
11	Unclear ambiguous requirements	56	2
12	No proper documentation of changes demanded	50	3

16	Contract entitlement issues	34	4
13	Communication issues between contractor and client	31	5
14	Non-involvement of client at design stage	27	6
17	Conflict of interest and behavioural barriers between contractor and client.	18	7
	Design-related factors		
19	Inadequate scope of work/specifications	51	1
20	Change requirements by owners	47	2
22	Design errors	40	3
18	Incomplete/inaccurate design	35	4
23	Unrealistic time frame	23	5
21	Incomplete assessments	14	6
	Behaviour-related factors		
27	Failures in quick decision making.	65	1
24	Lack of professional behaviour	50	2
28	Intent to resolve conflicts/disputes.	48	3
25	Poor communication	39	4
29	Lack of teamwork and collaboration	38	5
30	Fear of loss or getting disadvantage	28	6
26	Lack of motivation.	12	7
	Contractor-related factors		
31	Poor project management practices	52	1
33	Poor contract administration practices	44	2
32	Poor monitoring and control as well as quality control practices.	35	3
34	Lack of expertise	35	3
35	Poor planning affects the implementation phase in a negative way	22	5
36	Conflict of interest with other stakeholders	22	5
	Project implementation-related factors		
37	Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)	65	1
39	External factors (weather conditions, strikes, material scarcity, uncontrollable factors)	62	2
41	Scarcity in skilled labour force	36	3
40	Change orders by clients or variation orders (changes in scope of work requested by contractor)	35	4
43	Incompetency in project management	35	4
42	Poor project planning	31	6

38	Inappropriate programmes.	16	7
	External factors		
46	Changes in laws or regulations (government level)	40	1
44	Unexpected weather conditions	26	2
45	Strikes	17	3
47	Natural disaster	17	3
	Categorical issues		
48	Financial issues	75	1
49	Contract related issues.	61	2
54	Project implementation related issues.	58	3
53	Contractor related issues.	44	4
51	Design process related issues.	40	5
50	Owner related issues.	34	6
52	Behaviour related issues.	27	7
55	External issues.	21	8

Table 8-10 Summary of the cause categories (total weightage and rank)

8.5 Recommendations:

The last section of the questionnaire was developed to populate the recommended framework. As discussed in the analysis of the interviews, there were few core problem areas that were identified.

The suggestions were grouped to find out respondents' perceptions of and their agreement/disagreement with the suggested course of actions for KSA being recommended using a Likert scale.

The strategies or actions recommended were also asked to be gauged on their ease of implementation within the KSA industrial environment. The suggestions were also categorised to reflect the improvements needed in a broader context to align the strategies and measures to mitigate negative effects. They were ranked in terms of their preference and implementation in KSA through a relative importance index.

8.5.1 Alternative ways to settle claims:

Forty percent of the respondents were of the opinion that claims need to be settled by adopting alternative ways that could be speedier and less costly – see Figure 8-21

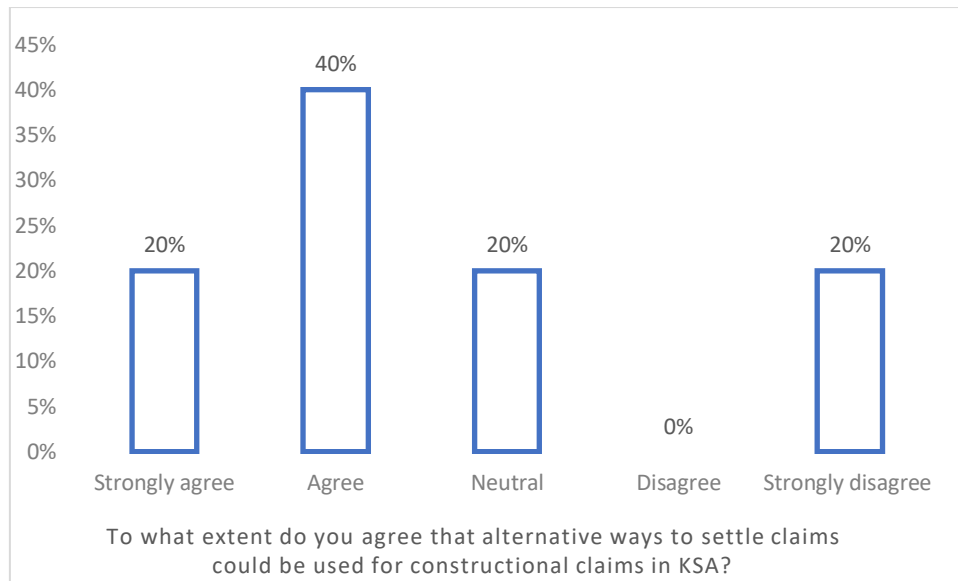


Figure 8-21 Response to question on the adoption alternative claim settlement methods

The respondents were then asked to rank the options on a scale of five from definitely to never regarding some procedural recommendations that could be implemented in KSA. These options were ranked using a relative importance index (RII) – see Table 8-11.

Procedural recommendations that should be considered in KSA to improve claim settlement procedure	RII	Rank
Introduce time limits to each process.	0.92	1
Use modern technology and tools to collaborate and process information	0.78	2
Introduce claim settlement procedural standards	0.74	3
Introduce electronic system and centralised data processing	0.72	4
Introduce an alternative system specific to the project for quick decisions.	0.7	5

Table 8-11 Relative importance of suggested recommendations for improvement

The respondents chose the “introduction of time limits to each process” as the best option. The use of modern technology and tools to process information is also seen as a good procedural recommendation that could be a way to handle claims more efficiently. The least favourable option was to "introduce alternative system specific to project for quick decisions".

8.5.2 Improvements needed in role of bureaucracy:

The next set of questions were targeted at understanding the role and effects of bureaucracy and to obtain suggestions for improvement. Forty percent of respondents strongly agreed that there was room for improvement, while thirty percent agreed that the effects of bureaucracy on decision-making and approvals could be lessened by introducing time frames – see Figure 8-22.

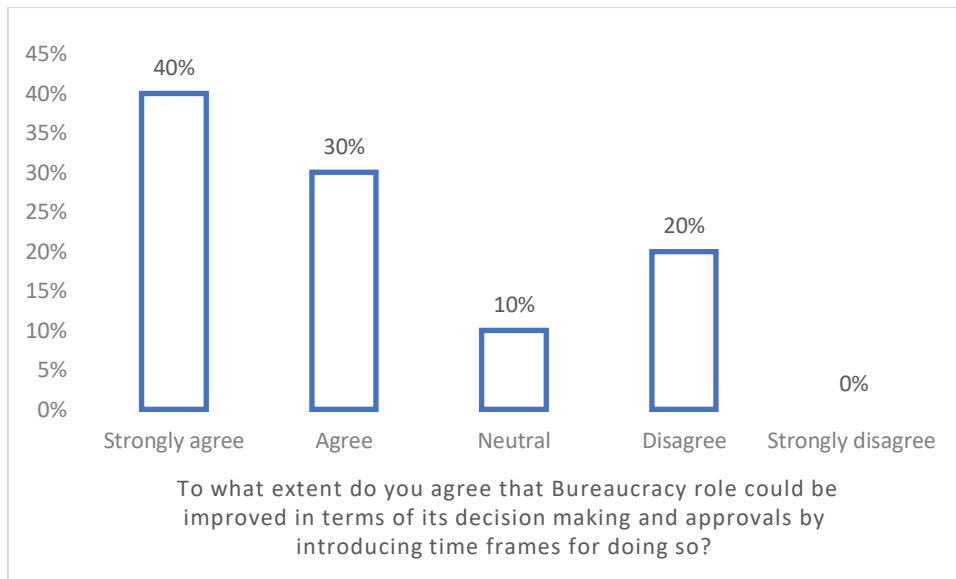


Figure 8-22 Views of the respondents on how to improve/lessen bureaucracy

Respondents were then asked to rank the "most adverse factor" amongst the identified factors that hinder the project, namely:

- The time needed for approvals is very long
- Verbal communications
- Contractors feeling pressurised so ignore written requirements for more work
- Non-seriousness towards documentation.
- Due to the scarcity of professionals and overburden of projects, a longer time is taken for approvals.
- Power dynamics

From the respondents' viewpoint, seventy percent were of the opinion that the most hindering factor that creates difficulties is the "Time needed for approvals is very long". Thirty percent think that "Verbal communications" are more damaging – see Table 8-12.

Adverse factors related to bureaucracy role	% Frequency
The time needed for approvals is very long	70%
Verbal communications	30%
Contractors feeling pressurised so ignore written requirements for more work	0%
Non-seriousness towards documentation.	0%

Due to the scarcity of professionals and overburden of projects, a longer time is taken for approvals.	0%
Power dynamics	0%

Table 8-12 Adverse factors related to the role of bureaucracy

The next set of questions sought the view of respondents on some recommendations that were designed based on the identified adverse factors. These recommendations were ranked on a scale of five from "definitely" to "never". They were also asked to rank the suggestions on a scale of one to five with respect to their implementation with reference to KSA from "very easy" to "very difficult".

For analysis purpose, the relative importance index of the recommendations and ease of implementation was calculated – see Table 8-13.

Improving the role of bureaucracy	Recommendations	
	RII	Rank
Revisit the procedure of contract award. Introduce more technical screening so that contractors could be selected as per their experience in the industry.	0.86	1
Standardise the construction sector. Introduce certification and grades for contractors. This will help in assembling contractors' pool and keeping the quality intact and right to the mark	0.82	2
Revisit the standard form of contract. There is a need of understanding the new era need for "flexibility" and "ease" so that more and more foreign companies could be attracted as well as local contractors also upgrade. Some international form of contract like FIDIC can be used to fill the gap and persuade international firms to work in KSA.	0.82	2
Introduce an electronic system to accumulate all available information regarding a project accessible to all stakeholders. The system should be centralised in terms of its information updating and sharing.	0.8	4
Have better tools introduced in the construction industry for collaboration and communication? The use of modern technological tools can help in making processes transparent as well as quick (Not clear/similar to II)	0.8	4
Start training programs for all involved stakeholders of the industry so that they are more aware of new trends, technological advancements, and technological needs of the modern-day world	0.8	4
The construction industry needs standardisation for its processes. Introduce benchmarks to gauge each process in the construction process. Standardised project management criterion should also be mandated and evaluated on each process so that implementation could be reinforced	0.78	7

Introduce interim committees assigned to a specific project. The committee's responsibility of keeping a transparent way of handling the project as well as put time limits for every task and its approval.	0.6	8
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Table 8-13 Ranking of the suggestions to improve the role of bureaucracy according to Relative importance index

The top-ranked recommended factors were allocated to broader categories to focus on the suggested areas of improvement and the measures to accompany the strategies to facilitate those improvements (Table 8-14).

Ranking of recommendations regarding bureaucracy role according to their relative importance index	Category
Revisit the procedure of contract award. Introduce more technical screening so that contractors could be selected as per their experience in the industry.	Contract Awarding
Standardise the construction sector. Introduce certification and grades for contractors. This will help in assembling contractors' pool and keeping the quality intact and right to the mark	Standardise construction sector (certifications and grading)
Revisit the standard form of contract. There is a need of understanding the new era need for "flexibility" and "ease" so that more and more foreign companies could be attracted as well as local contractors also upgrade. Some international form of contract like FIDIC can be used to fill the gap and persuade international firms to work in KSA.	Revisit standard form of contract
Introduce an electronic system to accumulate all available information regarding a project accessible to all stakeholders. The system should be centralised in terms of its information updating and sharing.	Centralised information management system
Have better tools introduced in the construction industry for collaboration and communication. The use of modern technological tools can help in making processes transparent as well as quick.	Communication and collaboration tools (centralised information management system)
Start training programs for all involved stakeholders of the industry so that they are more aware of new trends, technological advancements, and technological needs of the modern-day world	Training

Table 8-14 Top ranked recommendations regarding bureaucracy role allocated to broader categories.

It is crucial to understand the dynamics of the KSA working environment and focusing on realistic improvement areas/strategies and so recommendations were ranked according to their ease of implementation in KSA (Table 8-15).

The "introduction of the electronic system to accumulate all available information accessible to all stakeholders with the centralised system" ranked first in terms of ease of implementation.

Whereas "revision of contract awarding procedure" was ranked second, although it had been first in the recommendation options.

"Revisiting the standard form of contract" was ranked as hardest to implement in KSA, with "standardisation of construction sector in KSA" being perceived as difficult to implement option. Both of these options were originally ranked quite high as beneficial for KSA.

Improving the role of bureaucracy	Implementation	
	RII	Rank
Introduce an electronic system to accumulate all available information regarding a project accessible to all stakeholders. The system should be centralised in terms of its information updating and sharing.	0.84	1
Revisit the procedure of contract award. Introduce more technical screening so that contractors could be selected as per their experience in the industry.	0.78	2
Have better tools introduced in the construction industry for collaboration and communication. The use of modern technological tools can help in making processes transparent as well as quick (Not clear/similar to II)	0.76	3
The construction industry needs standardisation for its processes. Introduce benchmarks to gauge each process in the construction process. Standardised project management criterion should also be mandated and evaluated on each process so that implementation could be reinforced	0.6	4
Standardise the construction sector. Introduce certification and grades for contractors. This will help in assembling contractors' pool and keeping the quality intact and right to the mark	0.6	4
Start training programs for all involved stakeholders of the industry so that they are more aware of new trends, technological advancements, and technological needs of the modern-day world	0.52	6
Introduce interim committees assigned to a specific project. The committee's responsibility of keeping a transparent way of handling project as well as put time limits for every task and its approval.	0.5	7
Revisit the standard form of contract. There is a need of understanding the new era need for "flexibility" and "ease" so that more and more foreign companies could be attracted as well as local contractors also upgrade. Some international form of contract like FIDIC can be used to fill the gap and persuade international firms to work in KSA.	0.48	8

Table 8-15 Ranking of the suggestions to improve the role of bureaucracy as ease of implementation according to Relative importance index

8.5.3 Most important factor when resolving construction claims:

It is very relevant to identify factors constituted as most important in the eyes of practitioners and these were established in the interview with the practitioners.

To codify the best practices for claim settlement, it is most significant to align those factors the experts think should be considered:

- Fairness
- Confidence of the stakeholders on the settlement process.
- Speed of reaching a settlement (time efficiency).
- Cost of reaching a settlement (cost efficiency)
- Flexibility.
- Non-adversarial with a win-win situation.
- Retaining the relationship

The most important factor for resolving a claim	Frequency Percentage
Speed of reaching a settlement (Time efficiency).	50%
Fairness	30%
Confidence of the stakeholders on the settlement process.	20%
Cost of reaching settlement (Cost efficiency)	0%
Flexibility.	0%
Non-adversarial with a win-win situation.	0%
Retaining the relationship	0%

Table 8-16 Ranking of factors important for resolving a claim

Three main factors were highlighted by the experts – see Table 8-16. Fifty percent of the respondents ranked "Speed of reaching a settlement (Time efficiency)" as most important. This was followed by “fairness” that scored thirty percent. Twenty percent of respondents said that "Confidence of the stakeholders in the settlement process" was the most important aspect of the process.

8.5.4 Improvements needed in the pre-construction phase:

The respondents were then asked to rank the factors that need to be improved in the pre-construction phase. The problems with pre-construction had been highlighted and discussed thoroughly in the first interview session. Respondents ranked the factors on a scale of five from "strongly disagree" to "strongly agree" on these factors – see Table 8-17.

"Communication between the parties (design team, client, contractor, architect)", "Definition of the scope of work" were equal first with "Construction documents used for bidding" being the next choice.

Pre-construction phase processes to be improved	RII	Rank
Communication between the parties (design team, client, contractor, architect)	0.92	1
Definition of the scope of work	0.92	1
Construction documents used for the bidding	0.88	3
Evaluation of the programs with reference to implementation	0.84	4
Information sharing and collaboration	0.82	5
Site assessments.	0.8	6
Design process	0.8	6

Table 8-17 Processes to be improved in pre-construction phase according to relative importance index

8.5.5 Improvements needed in the design process:

Amongst the issues or problem areas that were highlighted and focused on in the first session of interviews was the design process. Many problems are interconnected to the pre-construction process and especially the inept design process that initiates dispute and conflicts in later stages.

In answer to the questions focused on identifying the main problem areas and the recommendation that can cater to such issues in the design process, around thirty percent of respondents strongly agree – see Figure 8-23. Sixty percent agree on the fact that the design process is most detrimental and cause a lot of problems in the implementation stage.

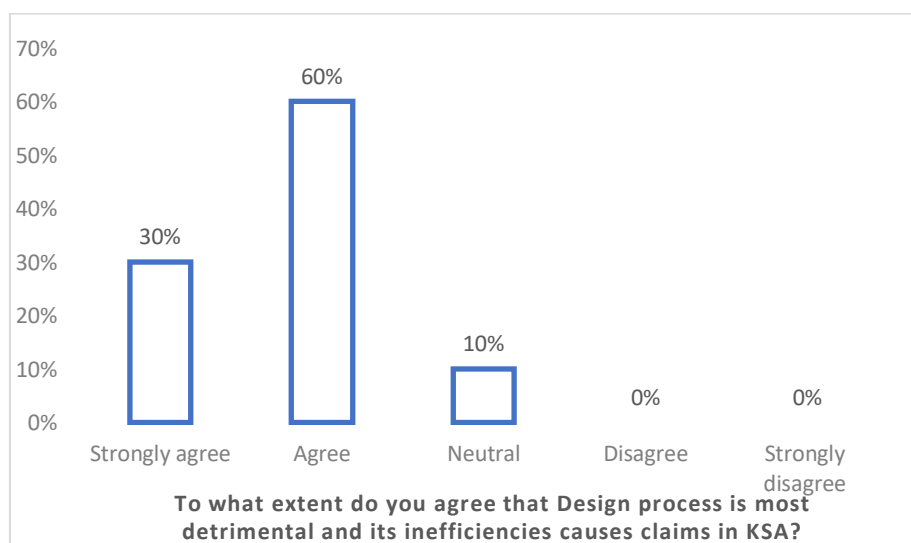


Figure 8-23 The respondents' views on the detrimental impact of the design process

The respondents then ranked the recommendations to improve the design process on scale of five. The relative importance index was calculated to overall rank these recommendations. See Table 8-18.

Recommendations for improving the design process	Recommendations	
	RII	Rank
Have distinction of specification of works required at the early stages with consideration that perspective specification or performance specifications will suit the type of the project undertaken. The decision should also consider the stakeholder who will receive the best value.	0.86	1
Manage change requirements by owners with improved communication and process documentation. Automation is required as if when change happened and subsequent approval, request for quotes, purchase orders and logs of data	0.8	2
Better Design tools should be adopted like BIM. The assessment of the site, material requirements and design modelling all need to be automated and well collaborated.	0.8	2
Work breakdown structures should be incorporated properly with updated data after changes.	0.8	2
Configure workflow tools or business process management tools. Another option is to introduce Visual dashboards that have colour codes to display action items and responsibility by status	0.76	5
Adopt a Flexible pricing structure	0.62	6

Table 8-18 Ranking of the suggestions to improve the design process according to Relative importance index.

With an RII of 0.86, the respondents believed the recommendation to "have distinction of specification of works required at early stages,..value" would help to address the conflicting issues later on in the implementation stage.

The next three most favoured suggestion - "Manage of change requirements....data", "Introduction of better design tools like BIM...collaborate" and "work breakdown structures should be incorporated... changes" – were ranked equally.

Table 8-19 shows the categorisations of top-ranked recommendations to design/codify strategies for improvements.

Ranking of recommendations regarding design process by RII	Relative category associated with Design Process
Have distinction of specification of works required at the early stages with consideration that perspective specification or performance specifications will suit the	Specifications

type of the project undertaken. The decision should also consider the stakeholder who will receive the best value.	
Manage change requirements by owners with improved Communication and process documentation. Automation is required as if when change happened and subsequent approval, request for quotes, purchase orders and logs of data	Change Orders (Notifications and documentation)
Better Design tools should be adopted like BIM. The assessment of the site, material requirements and design modelling all need to be automated and well collaborated.	Design tools
Work breakdown structures should be incorporated properly with updated data after changes.	Work breakdown structures (workflow tools and business process management tools. Visual dashboards like colour codes to display action items and responsibility)

Table 8-19 Relative category associated to top ranked design process recommendations

In terms of implementation with respect to KSA, the respondents ranked the same options on the spectrum of ease of implementation from "very easy" to "very difficult" – see Table 8-20. The "work breakdown structures properly incorporated with updated data...changes" is easier to focus upon. Whereas for the other two options, "have the distinction of specification...value" and "manage change requirements...data", the difficulty magnitude is considered to be around "moderate" to implement in KSA.

The most difficult option is to "adopt flexible pricing structure". Interestingly the option of "better design tools to be adopted like BIM...collaborated" was perceived to be "moderate to difficult" to implement.

Improving the design process	Implementation	
	RII	Rank
Work breakdown structures should be incorporated properly with updated data after changes.	0.86	1
Have distinction of specification of works required at the early stages with consideration that perspective specification or performance specifications will suit the type of the project undertaken. The decision should also consider the stakeholder who will receive the best value.	0.62	2

Manage change requirements by owners with improved communication and process documentation. Automation is required as if when change happened and subsequent approval, request for quotes, purchase orders and logs of data	0.56	3
Configure workflow tools or business process management tools. Another option is to introduce visual dashboards that have colour codes to display action items and responsibility by status	0.52	4
Better design tools should be adopted like BIM. The assessment of the site, material requirements and design modelling all need to be automated and well collaborated.	0.5	5
Adopt a flexible pricing structure	0.34	6

Table 8-20 Ranking of the suggestions to improve design process as ease of implementation according to Relative importance index.

An important aspect of the design process (pre-construction stage) is the "process of designing". The client hires the design team and the design is the basic step towards the evaluation of cost and time for the construction process, as well as a foundation for construction documents.

Respondents were asked to rank some suggestions to deal with the overall process of designing. It includes various interconnected actions and procedures that deeply affect the design aspects (Table 8-21).

The "introduction of BIM...stages" option is ranked highest with "introduce material accuracy and quality factor a part of design process...informed" in second place. The other two options were highly ranked by the respondents - "Finalise design specifications before project implementation stage...outcomes" and "Introduction of the preliminary stage between contract awarding and construction stage...time etc.".

Recommendations to improve the overall design process to reduce damage in later stages	RII	Rank
Introduce BIM and such applications that can collate and collaborate information at all stages	0.84	1
Introduce material accuracy and quality factor a part of the design process. Mandate the requirements to be sorted out before finalising the bidding document so that bidding is more informed.	0.8	2
Finalise Design specification before project implementation stage by modelling the design at the site conditions and recording outcomes.	0.76	3

Introduce the Preliminary stage in between the contract awarding and construction stage, where the selected contractor is guided through the project site and relevant information to create his more accurate schedules, programs, mock-ups and shop drawings. The stage can also be more explicitly defined, so that contractor and client are on the same information level before the start of implementation by introducing various checkpoints and agreement of design, material, shop drawing, time etc.	0.76	3
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Table 8-21 Recommendations to improve the overall design process to reduce damage in later stages according to relative importance index

The recommendations that were highly ranked were allocated to the respective category to plan a process to mitigate the negative impacts of the claim occurrences and their effects as shown in Table 8-22.

Top-ranked recommendations regarding the process of designing using RII	Category
Introduce BIM and such applications that can collate and collaborate information at all stages	Design Tool
Introduce material accuracy and quality factor a part of the design process. Mandate the requirements to be sorted out before finalising the bidding document so that bidding is more informed.	Material and quality factors to add at the design stage before finalising bidding document

Table 8-22 Categories allocated to top ranked recommendations regarding the process of designing using RII

8.5.6 Broader construction reforms:

It is important to understand the practitioners' view about overall construction industry reforms and needed improvements and their perception of the KSA industrial standards and environment and what they think should be improved. The analysis identified the aspects important to manage the claim occurrences and claim settlement issues in better ways. This will help in codifying best practices for the framework.

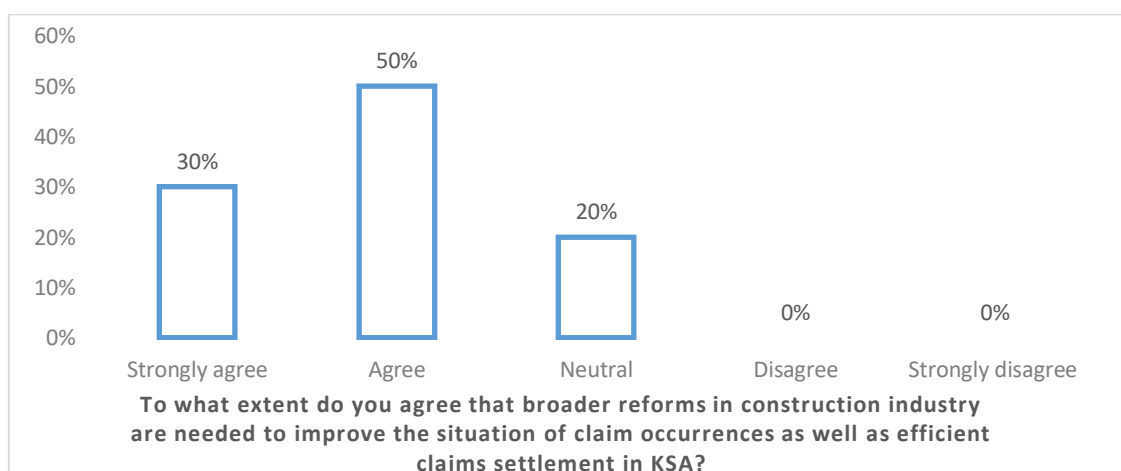


Figure 8-24 Respondents' views on whether broader reforms are needed to improve the claims processes

Thirty percent of the respondents strongly agree that broader reforms should be focused upon for improvements at the operational level of the projects; fifty percent agreed. Only twenty percent were indecisive – see Figure 8-24.

The next step was to narrow down the improvement areas according to the practitioners' preferences.

Broader construction industry reforms	Recommendation	
	RII	Rank
There should be certificate programs introduced.	0.82	1
There should be grading of the contractors. Standardise the measures and introduce a universal scale of performance measurement for them. A standard-based grading model should be introduced to rank contractors as per their specialities, expertise, performance and projects undertaken	0.82	1
The construction industry in KSA needs to implement a broader performance measurement system. That system should introduce the guidelines to implement the project and recommend benchmark standards (especially for public sector projects).	0.82	1
Mandate project management standards, including control and monitoring systems. There should be a centralised system to accumulate information regarding the progress of each contractor and project on these standards.	0.82	1
Supply chain management is one area that needs a reformed approach so that it could be managed properly. Introduce tools and applications along with prequalification of suppliers to retain the healthy pool.	0.82	1
Professional training of contractors should be introduced with refresher courses and certificates compulsory to pass after a certain amount of time. Courses, training programs, and the certificate should be revisited from time to time to keep them updated to meet modern construction needs).	0.8	6
Adopt to new modern technological improvements by introducing, raising awareness, educating and then training industry professionals about modern IT tools and applications for communication, collaboration, design and build applications, project progress documentation etc	0.72	7

Table 8-23 Ranking of broader construction industry reforms recommendations as per RII

The practitioners favoured all seven of the recommendation options shown in Table 8-23. The top ranked recommendations were categorised to highlight areas needing focus – see Table 8-24

Ranking of recommendations for broader construction reforms using RII		Category
There should be certificate programs introduced.		Certifications
There should be grading of the contractors. Standardise the measures and introduce a universal scale of performance measurement for them. A standard-based grading model should be introduced to rank contractors as per their specialities, expertise, performance and projects undertaken		Grading of contractors
The construction industry in KSA needs to implement a broader performance measurement system. That system should introduce the guidelines to implement the project and recommend benchmark standards (especially for public sector projects).		Performance measurement system
Mandate project management standards, including control and monitoring systems. There should be a centralised system to accumulate information regarding the progress of each contractor and project on these standards.		Control, monitoring & centralised information management system
Supply chain management is one area that needs a reformed approach so that it could be managed properly. Introduce tools and applications along with prequalification of suppliers to retain the healthy pool.		Supply chain management

Table 8-24 Categorisation of top ranked broader construction reforms recommendations.

The recommendations were then ranked as per ease of implementation in KSA on scale of five by respondents. They were then ranked as per RII (see Table 8-25)

Ease of implementation of broader construction industry reforms	Implementation	
	RII	Rank
The construction industry in KSA needs to implement a broader performance measurement system. That system should introduce the guidelines to implement the project and recommend benchmark standards (especially for public sector projects).	0.74	1
There should be certificate programs introduced.	0.66	2
There should be grading of the contractors. Standardise the measures and introduce a universal scale of performance measurement for them. A standard-based grading model should be introduced to rank contractors as per their specialities, expertise, performance and projects undertaken	0.62	3
Mandate project management standards, including control and monitoring systems. There should be a centralised system to accumulate information regarding the progress of each contractor and project on these standards.	0.6	4

Professional training of contractors should be introduced with refresher courses and certificates compulsory to pass after a certain amount of time. These should be revisited from time to time to keep them updated and as per modern advanced construction needs.	0.56	5
Supply chain management is one area that needs a reformed approach so that it could be managed properly. Introduce tools and applications along with prequalification of suppliers to retain the healthy pool.	0.54	6
Adopt to new modern technological improvements by introducing, raising awareness, educating and then training industry professionals about modern IT tools and applications for communication, collaboration, design and build applications, project progress documentation etc	0.52	7

Table 8-25 Ranking of recommendations for broader construction industry reforms as ease of implementation according to RII.

The options "professional training of contractors...time", "Supply chain management... pool", and "Adopt to new modern technological improvements...documentation etc." were ranked "moderate to difficult" to implement in KSA by most of the respondents. the recommendation "Mandate project management...standards" was ranked as moderate to be implemented in KSA.

8.5.7 Training programmes in project management, competency building and information technology:

The most important dimension of improvements is to introduce a trained and skilled workforce. Thirty percent of respondents strongly agree, while forty percent agreed on the introduction of the training programme in areas of project management, competency building and information technology. Thirty percent were indecisive – see Figure 8-25.

Thus, most of the recommendations to improve and introduce better practices at the operational level activities were favoured by all respondents.

The option with the highest relative importance index was to hold "seminars about behavioural approaches at workplaces and handling of disputes...change". Closely followed by "Training skill regarding conflict management...education" and "Training of skill force...industry" – see Table 8-26.

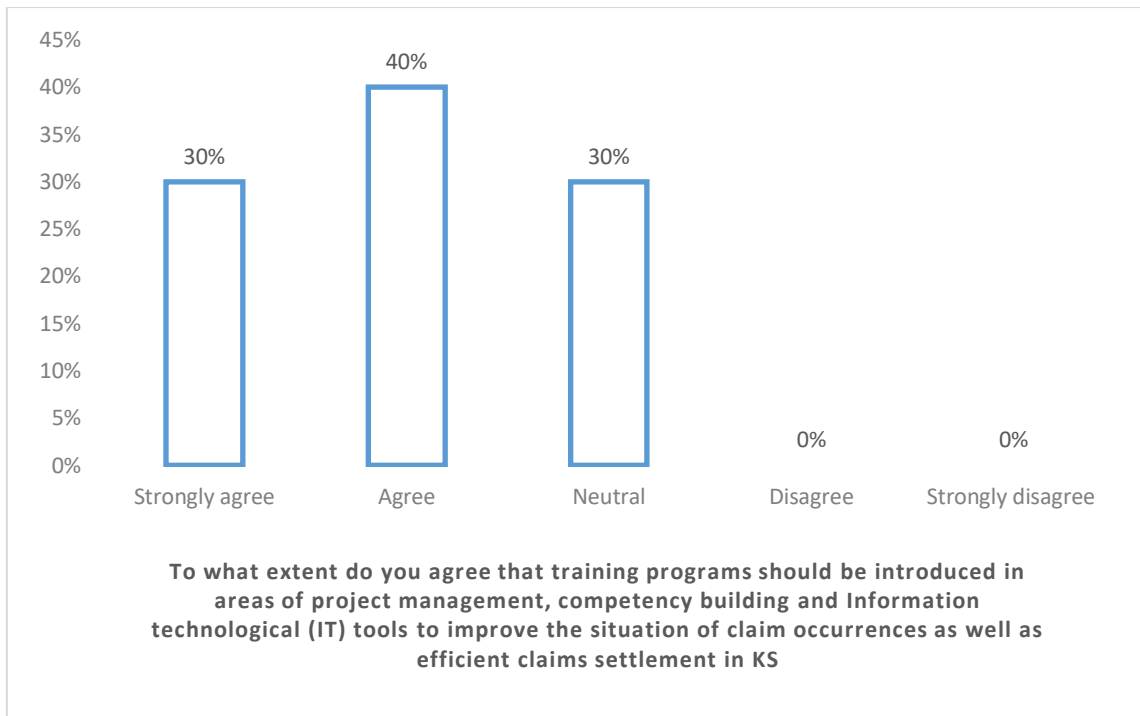


Figure 8-25 Respondents' view on the introduction of training programmes

Training programmes	Recommendation	
	RII	Rank
There should be seminars held about behavioural approaches at workplaces and handling of disputes at workplaces to raise awareness and acceptance of the needed change.	0.88	1
Training skills regarding conflict management is important to foster a healthy environment. Arrange Conflict management training to make stakeholders aware of conflicts, their causes, and ways to handle them in non-adversarial ways. The awareness about conflict handling and options to resolve them is the first step towards education.	0.84	2
Training of skill force is very important, and this needs Ministry involvement too. Introduce such skill-building courses at all levels from "skilled workforce requirements in the field" to "management level". One way can be to introduce certification programs made compulsory to work in the industry.	0.84	2
Training skills for management practices. Project management courses should be introduced and made compulsory for all	0.82	4

stakeholders who, in a way or another, are involved in project management, controlling and evaluation.		
Reinforce the need of adopting alternative dispute resolution methods as non-adversarial ways to handle disputes in the construction industry by holding seminars and educating the relevant stakeholders by different measures, including releasing promotional, educational and raising awareness booklets and brochures.	0.8	5
The construction industry in KSA as a whole needs to adapt to the new better ways. This needs Ministry involvement in raising awareness and usage of IT trends on broader levels	0.8	5
Train KSA labour market and professional staff regarding new technological tools used in the modern construction industry.	0.8	5

Table 8-26 Ranking of Training programmes recommendations as per RII

The top three ranked recommendations were categorised to highlight the basic aspects/factors for training programmes that should be launched and focused on for implementing overall broader reforms and mitigating the negative effects that projects face in later stages – see Table 8-27.

Top Ranked recommendations for Training programme using RII	Category
There should be seminars held about Behavioural approaches at workplaces and handling of disputes at workplaces to raise awareness and acceptance of the needed change.	Behavioural approaches
Training skills regarding conflict management is important to foster a healthy environment. Arrange Conflict management training to make stakeholders aware of conflicts, their causes, and ways to handle them in non-adversarial ways. The awareness about conflict handling and options to resolve them is the first step towards education.	Conflict management
Training of skill force is very important, and this needs Ministry involvement too. Introduce such skill-building courses at all levels from "skilled workforce requirements in the field" to "management level". One way can be to introduce certification programs made compulsory to work in the industry.	Skill and capacity building

Table 8-27 Categories allocated to top Ranked recommendations for Training programme using RII

The same recommendations were ranked by respondents with regard to ease of implementation.

	Implementation
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Training programme	RII	Rank
Training skills for management practices. Project management courses should be introduced and made compulsory for all stakeholders who, in a way or another, are involved in project management, controlling and evaluation.	0.7	1
Training skills regarding conflict management is important to foster a healthy environment. Arrange Conflict management training to make stakeholders aware of conflicts, their causes, and ways to handle them in non-adversarial ways. The awareness about conflict handling and options to resolve them is the first step towards education.	0.7	1
Training of skill force is very important, and this needs Ministry involvement too. Introduce such skill-building courses at all levels from "skilled workforce requirements in the field" to "management level". One way can be to introduce certification programs made compulsory to work in the industry.	0.68	3
Reinforce the need of adopting alternative dispute resolution methods as non-adversarial ways to handle disputes in the construction industry by holding seminars and educating the relevant stakeholders by different measures, including releasing promotional, educational and raising awareness booklets and brochures.	0.66	4
Seminars should be held on behavioural approaches at workplaces and handling of disputes at workplaces to raise awareness and acceptance of the needed change.	0.64	5
The KSA construction industry needs to adapt to the new better ways. This needs Ministry involvement in raising awareness and usage of IT trends on broader levels	0.58	6
Train KSA labour market and professional staff regarding new technological tools used in the modern construction industry.	0.52	7

Table 8-28 Ranking of training programmes as ease of implementation.

Table 8-28 shows the ranking of training programmes using RII according to ease of implementation in KSA. Sixty percent of the respondents viewed "training skills of management practices...evaluation" as moderately easy to implement, while thirty percent perceive it as easy to implement. The "training skills regarding conflict management...education" has around sixty percent of respondents gauging it at easy and thirty as moderate in terms of implementation in KSA. The other recommendations were considered to be moderate to difficult to implement.

8.5.8 Legal system framework:

The respondents were then asked to rank the next set of questions concerning the legal system and any needed improvements to the present system. Forty percent strongly agreed that the legal system needs robust amendment to facilitate the claim settlement procedure (Figure 8-26).

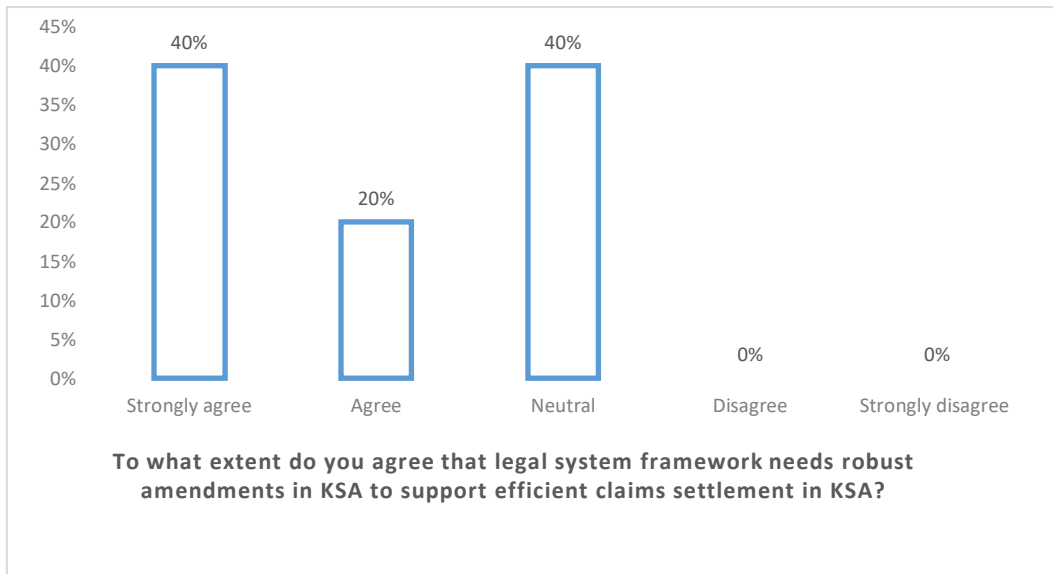


Figure 8-26 Respondents' views on the need for amendments to the legal system

Twenty percent agreed with the proposition, and forty percent remained indecisive on the matter. The respondents ranked "Introduce dispute resolution boards ...industry" first with an RII of 0.84 (Table 8-29).

Following closely with 0.82 RII was the option "There is a need of alternative legal framework dedicated to constructional claims ... efficiently".

Legal system framework	Recommendations	
	RII	Rank
Introduce dispute resolution boards that may constitute judicial personal as well as professionals from the construction industry.	0.84	1
There is a need for an alternative legal framework dedicated to constructional claims so that settlement is quick and robust. There can be time limits introduced to settle matter more efficiently	0.82	2
Judicial training is very important regarding the construction industry and its disputes.	0.76	3
Introduce judicial committees' system that is made specifically for a certain project on an ad-hoc basis to settle constructional claims and disputes rapidly.	0.76	3

Table 8-29 Ranking of the recommendations for the legal system framework according to RII.

The top three ranked recommendations by the practitioners are categorised in the broader groups as shown in Table 8-30. The categorisation of these recommendations reflects the core areas that need to be focused upon with respect to the legal framework in KSA.

Top-ranked recommendations regarding legal system framework	Category
Introduce dispute resolution boards that may constitute judicial personal as well as professionals from the construction industry.	Dispute resolution boards
There is a need for an alternative legal framework dedicated to constructional claims so that settlement is quick and robust. There can be time limits introduced to settle matter more efficiently.	Alternative legal framework support
Judicial training is very important regarding the construction industry and its disputes.	Judicial training

Table 8-30 Categories of top ranked recommendations regarding legal system framework using RII

The recommendations were ranked on a scale of five with respect to its implementation in KSA (Table 8-31). It is worth noting that the respondents ranked all the options from moderate to difficult scale. The only exception was "there is a need of alternative legal framework dedicated to constructional claims...efficiently". This was ranked by thirty percent of respondents as easy to implement, while seventy percent ranked it to be moderate. "Judicial training is very...disputes" was ranked as most difficult to implement with respect to KSA.

Legal system framework	Implementations	
	RII	Rank
There is a need for an alternative legal framework dedicated to constructional claims so that settlement is quick and robust. There can be time limits introduced to settle matter more efficiently	0.66	1
Introduce judicial committees' system that is made specifically for a certain project on an ad-hoc basis to settle constructional claims and disputes rapidly.	0.6	2
Introduce dispute resolution boards that may constitute judicial personal as well as professionals from the construction industry.	0.54	3
Judicial training is very important regarding the construction industry and its disputes.	0.48	4

Table 8-31 Ranking of legal system framework recommendation as ease of implementation

8.5.9 Claim settlement procedure:

Sixty percent of the respondents strongly agreed, while forty percent agreed, that claim settlement procedure needs robust amendment in KSA (Figure 8-27).

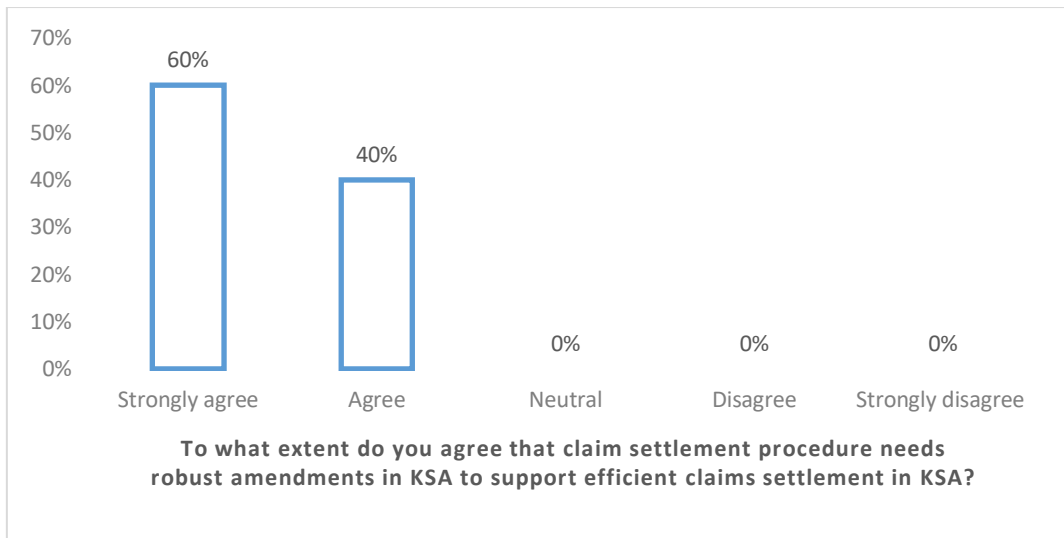


Figure 8-27 Respondents views on the need for robust amendment of the claim settlement procedure

The practitioners were asked to rank the recommendations that reflect different aspects of claim settlement. It will help to understand the expert's opinion regarding the claim settlement procedure adopted in KSA and factors that, in their opinion, should be incorporated in the improvement plan.

The suggestions ranked as good to pursue included "Amend standard form contract with sequential steps...dispute", "Amend standard form of contract with clauses regarding ...adopted" and "introduce a standardised process for claim presentation. Uniform process ...across the industry". (See Table 8-32).

The top three recommendations were categorised to reflect upon the needed improvements in broader areas as shown in Table 8-33

Ranking of recommendations for improving claim settlement procedures	Recommendations	
	RII	Rank
Amend standard form of contract with clauses introduced for sequential steps to be undertaken in case of dispute	0.9	1
Amend standard form of contract with clauses regarding dispute resolution methods that should be adopted.	0.9	1
Introduce a standardised process for claim presentation. The uniform process should be followed throughout the industry. The claim submission, requirement of proof and	0.9	1

support documents as well as presentation of proofs should be universally known and uniform across the industry.		
Amend standard form of contract with clauses regarding alternative dispute resolution methods	0.88	4
Regularise the claim settlement procedure. There should be legally defined standards that are relevant to the construction industry.	0.86	5
Revisit Procurement policy for the project. There should be a screening of contractors on the basis of technical specialities" and "project-specific requirements" so that such more relevant and professional contactors could be shortlisted.	0.84	6
Regularise the claim analysis process. The regulations regarding forensic analysis of proofs presented and the laws adopted to evaluate the proofs should be publicly known.	0.82	7
The compensation analysis also needs a robust defined framework that should be followed through the industry. These norms should be defined in order to create trust and raise positive perception regarding the fairness of the system.	0.8	8
Introduce two-level or three-level tender processing where each step shortlists contractors on the basis of technicalities, professional score and then cost.	0.74	9

Table 8-32 Ranking of recommendations for improvement to claim settlement procedures according to RII

Top ranked recommendations regarding claim settlement procedure using RII	Category
Amend standard form of contract with clauses introduced for sequential steps to be undertaken in case of dispute	Sequential steps in dispute resolution
Amend standard form of contract with clauses regarding dispute resolution methods that should be adopted.	Dispute resolution methods
Introduce a standardised process for claim presentation. The uniform process should be followed throughout the industry. The claim submission, requirement of proof and support documents as well as presentation of proofs should be universally known and uniform across the industry.	Claim presentation

Table 8-33 Categories of top ranked recommendations regarding claim settlement procedure using RII

Improving claim settlement procedures and implementation	Implementation	
	RII	Rank
Amend standard form of contract with clauses introduced for sequential steps to be undertaken in case of dispute	0.8	1
Amend standard form of contract with clauses regarding dispute resolution methods that should be adopted.	0.72	2
Amend standard form of contract with clauses regarding ADR methods	0.7	3
Introduce two-level or three-level tender processing where each step shortlists contractors on the basis of technicalities, professional score and then cost.	0.66	4

Regularise the claim settlement procedure. There should be legally defined standards that are relevant to the construction industry.	0.62	5
Introduce a standardised process for claim presentation with a uniform process followed throughout the industry. The claim submission, requirement of proof and support documents and presentation of proofs should be uniform across the industry.	0.6	6
Revisit Procurement policy for the project. There should be a screening of contractors on the basis of technical specialities" and "project-specific requirements" so that such more relevant and professional contactors could be shortlisted.	0.58	7
The compensation analysis also needs a robust defined framework that should be followed through the industry. These norms should be defined in order to create trust and raise positive perception regarding the fairness of the system.	0.58	7
Regularise the claim analysis process. The regulations regarding forensic analysis of proofs presented and the laws adopted to evaluate the proofs should be publicly known.	0.52	9

Table 8-34 Ranking of recommendations for improving claim settlement procedures as ease of implementation according to RII.

With respect to implementation, the top three easily implemented recommendation with respect to KSA all were regarded amending the standard form of contract with clauses for sequential steps, dispute resolution and alternative dispute resolution respectively (see Table 8-34).

The most difficult recommendation to implement in KSA is to "regularise the claim analysis process... publicly known".

8.5.10 The standard form of contract:

The standard form of contract was broadly discussed by many experts as a cause of conflicting issues that create problems in settling disputes. It was highlighted in the interviews as well as the literature. The need was to dig down into the core problem of what is lacking in the standard form of contract being used in KSA that could be implemented or improved. The factors that the experts were asked to rank were:

- Lack of/unclear provisions regarding claim submission, forensic analysis and evaluation
- Unfair risk allocation.
- Undefined liabilities and obligations
- Unclear clauses about claim settlement procedure to follow
- Poor contract drafting practices

Eighty percent of the respondents felt that "unfair risk allocation" is the most important factor, while twenty percent think "lacking/unclear provisions regarding claim submission, forensic analysis and evaluation" is more problematic (Figure 8-28).

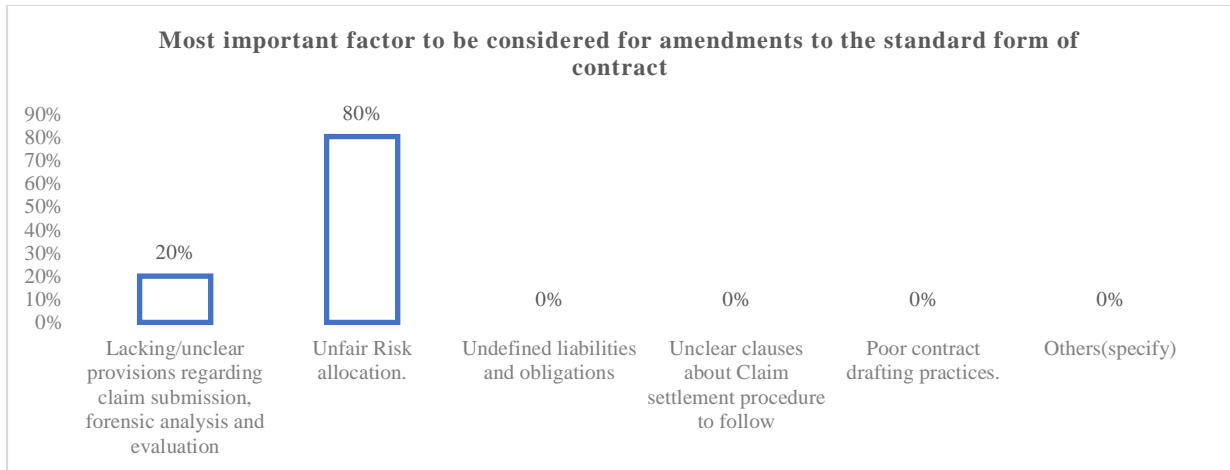


Figure 8-28 Respondents' views on amendments to the standard form of contract

The next step was to outline the options that focus upon improvements. Respondents were asked to rank these on the basis of their significance to the overall improvements.

The most significant option to consider was the "Lacking/unclear provisions regarding claim... evaluation". The second most significant option is "unclear clauses about claim settlement procedure to follow". And the third most significant option is the "unfair risk allocation". This is shown in Table 8-35.

Amendments in the standard form of contract	Significance	
	RII	Rank
Lack of/unclear provisions regarding claim submission, forensic analysis and evaluation	0.82	1
Unclear clauses about claim settlement procedure to follow	0.78	2
Unfair risk allocation.	0.72	3
Poor contract drafting practices	0.7	4
Undefined liabilities and obligations	0.64	5

Table 8-35 Significance of amendments in the standard form of contract according to RII.

The highly ranked options were categorised to reflect upon the needed improvements in the form of strategies to mitigate the effects (see Table 8-36).

Top-ranked recommendations regarding the standard form of contract using RII	Category
Lacking/unclear provisions regarding claim submission, forensic analysis and evaluation	Claim submission, forensic analysis and evaluation
Unclear clauses about claim settlement procedure to follow	Claim settlement procedures
Unfair risk allocation.	Unfair risk allocation
Poor contract drafting practices	Contract drafting

Table 8-36 Categories of top Ranked recommendations regarding the standard form of contract using RII

The options were ranked by the experts on a scale of five with respect to their preference towards applying amendments in the standard form of contract. The "unfair risk allocation" was the most preferred option with experts seeing it as highly useful to amend in the standard form of contract. The second most preferred option is the "lacking/unclear provisions regarding... analysis and evaluation". And the third-most preferred option is "poor contract drafting practices" (Table 8-37). Mostly the options are ranked from "moderately preferred to very preferred weight".

Amendments in the standard form of contract	Preference	
	RII	Rank
Unfair risk allocation.	0.84	1
Lacking/unclear provisions regarding claim submission, forensic analysis and evaluation	0.7	2
Poor contract drafting practices	0.7	2
Unclear clauses about claim settlement procedure to follow	0.68	4
Undefined liabilities and obligations	0.54	5

Table 8-37 Amendments in the standard form of contract as ease of implementation according to RII

8.6 Summary:

The chapter presented a brief analysis of the quantitative data. Overall weightage score and relative importance index was used to rank the issues and recommendation for improvement sections in different areas including pre-construction phase, design process, claim settlement procedures, bureaucracy role, factors important for claim resolution, broader construction reforms, training programmes, legal system and standard form of contract. This helped in highlighting the most important factors in each category and help in conceptual framework development and its population with the measures and strategies needed to achieve improvements in needed areas that cause problems in overall process.

CHAPTER 9: CODE OF BEST PRACTICE TO MITIGATE THE CLAIM SETTLEMENT PROCESS IN KSA

9.1 Introduction:

The chapter will focus on populating the framework developed in previous chapter. The measures and strategies aligned to each recommended category of needed improvement areas will be drafted. This will help in formulating the best code of practices to mitigate the negative effects hindering the process in KSA.

9.2 Code of best practice:

The code of best practice to mitigate claim settlement in KSA will be designed by structuring the conceptual framework and populating the framework with recommendations and strategies to improve the process for the betterment.

9.3 Conceptual framework:

The conceptual framework will structure the frame for laying out the measures to improve the claim settlement process. The frame to develop a code of best practice is shown in Figure 9-2.

9.4 Development of conceptual framework:

The conceptual framework is developed by identifying the core causes (see chapter 3), the issues relating to cause categories and their interrelationships (see chapter 4) and the improvement areas (see chapter 3).

The face-to-face interviews and the literature review helped identify the core problem areas being faced by the KSA construction industry in effectively managing claims. The cause categories were used to identify the needed improvement areas to sketch the frame for populating the measures to achieve the improvements.

9.5 Causes/issues that need improvement:

The category of issues/causes that were highlighted by practitioners with respect to KSA in the face-to-face interviews were related to (Section 3.5):

1. Design.
2. Construction process.
3. Project management.
4. Contract administration.
5. Uncontrollable events.

6. Bureaucracy and governance.
7. Industry level.
8. Claim settlement.

The broader categories these causes belong to are shown in Table 9-1

Issues/Causes	The broader category of causes
Design related.	Preconstruction issues
Construction process-related.	Construction issues
Project/Site management related.	Construction issues
Contract administration related.	Construction issues
Uncontrollable events.	Construction issues
Bureaucracy and governance-related.	Construction issues
Claim settlement-related	Claim settlement Issues

Table 9-1 Categorisation of causes

In light of the findings, these cause factors for inefficient claim settlement process can be grouped into three categories:

1. Pre-construction Issues
2. Construction Issues
3. Claim settlement Issues

(Note: The broader category of industry level issues fall under the industry level improvements. This encapsulates many operative (preconstruction and construction), bureaucratic (procedures especially for permits and approvals, classification/grading of contractors, standardised practices, use of modern tools etc.) as well as available support from legal framework.)

9.6 Categorising issues that need improvement:

The causation factors were analysed to identify the gaps in the present system (section 3.5). The gaps where improvement is needed were categorised to highlight the "crux of initiation of the problem". Figure 9-1 shows the categorisation of the areas requiring improvement.

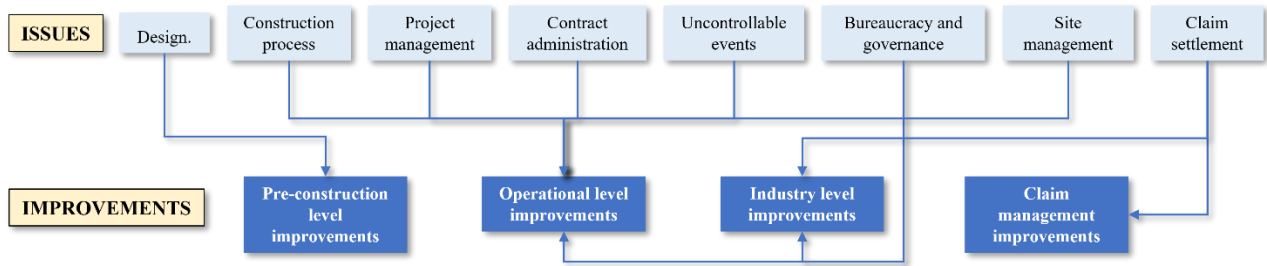


Figure 9-1 Categorisation of the areas requiring improvement

(Note: "Operational level improvements" is a broader category encapsulating the project management and control improvements along with operational activities).

The industry-level improvements are to underpin operational processes of the project by developing strategies that encapsulate the overall working environment in KSA.

9.6.1 Pre-construction process improvements:

The areas identified in the pre-construction process that needed improvements according to the primary data (analysis of interviews and survey) and secondary data (literature review) are:

1. **Design Process** (Section 7.2.1, section 7.2.2, section 7.3.1, section 8.3.4 & section 8.3.9)

The inefficiencies of the design process were the core problem of many delaying factors, as well as cost and quality issues that initiated claims. Major issues brought emanating from the analysis were:

- i) Incomplete/inaccurate design
- ii) Inadequate scope of work/specifications
- iii) Change requirements
- iv) Design errors

2. **Tendering & contract awarding** (section 7.2.2, section 7.2.4, section 7.3.1, section 7.3.2 & section 8.4.2)

This area focused on tendering and the contract award process. Bid selection on lowest price and minimal importance placed on performance parameters create a poor selection process for contractors. Major issues brought forward by the experts were:

- i) Procurement procedure
- ii) Selection criteria
- iii) Improve procurement policy
- iv) Standardise evaluation of companies
- v) Competitive bidding

3. Contract drafting (section 7.2.2, section 7.2.3, section 7.3.1, section 7.3.5, section 7.4.2, section 8.4.9 & section 8.4.10)

Contract drafting has not been a focus of the KSA construction industry, yet there are many issues, especially conflict and differences in interpretation. This is due to the obscurity or vagueness of contract clauses and their interpretation by the signatories.

Issues are:

- i) Unclear/inadequate contract (non-specific, vague)
- ii) Unfair risk allocation
- iii) Unclear contractual entitlements
- iv) Limited settlement options
- v) Improve standard contract

9.6.2 Operational level improvements (construction process):

The areas identified in the construction process that needed improvements according to the primary and secondary data are:

1. Project Management and Control (Section 7.2.1, Section 7.2.2, section 7.3.1, section 7.3.3, section 8.3.5, section 8.3.6 & section 8.3.7)

The competency of contractors and poor planning has been a key issue discussed by experts in KSA and widely debated in the literature. Management and control are interlinked to the lowest bid selection process where contractors' technical suitability is ignored. The issues are:

- i) Inexperienced contractors.
- ii) Incompetency in project management.
- iii) Poor project planning.
- iv) Inadequate scope of work/specifications.
- v) Poor monitoring and control as well as quality control practices.
- vi) Implementation/production complexities.
- vii) Poor contract management.
- viii) Lack of professional behaviour.
- ix) Changes (change orders by clients or variation orders, changes in scope of work).
- x) Behavioural issues.
- xi) Change in regulations.

- xii) External factors (weather conditions, strikes, material scarcity, uncontrollable factors).

2. **Supply chain management** (Section 7.2.2, section 8.3.6 & section 8.3.7)

The supply of resources in the form of material, equipment, labour or services has a major impact on project progress. The inefficiency in planning and lack of experience of contractors in KSA lead to poor planning and scheduling issues, as well as the lack of specialisation in the desired services field. This is one of the main causes of rework and poor quality. Issues are:

- i) Inexperienced contractors.
- ii) Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.).
- iii) Inappropriate programmes.
- iv) Poor project planning
- v) Lack of specialisation in appropriate fields.
- vi) Poor contract administration practices.

9.6.3 Claim management improvements:

The area identified from the primary and secondary data was the claim settlement process that needed improvements in methods. At present it suffers from:

1. **Claim settlement method improvement** (Section 7.3.6, section 7.4.2, Section 7.4.3 & section 7.5.2)
 - i) Lack of sequential approach towards claims.
 - ii) Lack of modern tools to document the change and support the process.
 - iii) Lack of disciplined approach.
 - iv) Failure to use modern IT.
 - v) Non-sequential and unsystematic process.
 - vi) Awareness of choices.
 - vii) People's attitude.
 - viii) Lack of awareness about ADRs.
2. **Standardization of practices** (Section 7.2.3 & Section 7.4.2)

The industry feels the lack of standard procedures and processes as a major factor that elongate the claims' process in KSA. Claim settlement needs proper notification and

documentation practices supported by relevant information; it needs to be standardised. The site staff, as well as practitioners, need to be well informed regarding the standard procedure to follow in case of conflicts and then conflict resolution. Solutions would include:

- i) Compensation analysis
- ii) Brief claim documentation
- iii) A fair evaluation of claims
- iv) Regularise the contractual claim process.

3. **Robustness and readiness of Legal infrastructure** (Section 7.4.1, section 7.4.2, Section 7.5.2, Section 7.5.3 & section 8.4.8)

The most notable aspect of claim settlement problems in KSA is the limitation of procurement law in the form of available and restricted options to resolve claims. Lack of expertise, and the number of experts in the field of conflict resolution, is also highlighted. The legal framework needs robust amendments to support claim settlement. In summary, the issues are:

- i) Limited settlement options (KSA procurement law).
- ii) Mediation/negotiation expertise (Lack of experts in conflict resolutions).
- iii) Train law firms about construction industry conflicts (judicial training).
- iv) Time-consuming and costly.
- v) Lack of legislative framework.
- vi) Concerns about trusting the non-judicial system and making decisions binding.
- vii) Constitution of a specialist committee for claim resolution.
- viii) Dispute resolution boards.

9.6.4 Industry-level improvements:

There are certain areas that were identified and discussed by experts that fall in the category of broader reforms or problems that encapsulate working norms in the KSA construction industry. The concerns raised by the analysis pointed to the need for a well-exemplified strategy industry-level initiatives to standardise the practices as well as increase productivity. The role of the bureaucratic layer, project management and control standards, as well as claim settlement

procedures, needs a robust restructuring at the industry level. The primary data (analysis of interviews and survey), as well as secondary data (literature review), highlighted industry level improvements:

1. **Standardised performance benchmarks and classification of the sector** (Section 7.2.4, section 7.3.6 & section 7.4.2)

A major aspect highlighted by practitioners is the lack of standardised practices and unawareness about the standard procedures to follow. There has been no focus on project management standards, or the qualification of contractors using a classification system. This has created a lack of performance benchmarks that can be compared broadly and uniformly across the industry for improvement. What is needed is:

- i) Standardised evaluation of companies.
- ii) Mandatory PM Standards.
- iii) Standardised processes.
- iv) Improvements in planning and management practices.
- v) Classification of the sector.

2. **Information management (communication and collaboration)** (Section 7.4.2, section 7.5.1, section 8.3.3, section 8.3.4, section 8.3.5, section 8.3.7, section 8.4.1, section 8.4.4 & section 8.4.6)

The lack of centrally-organised data systems and information management systems has been the cause of many delaying factors that raise conflicts amongst parties. The unsynchronised information also creates clashes and waste. Other issues are:

- i) Failures in quick decision making.
- ii) Brief claim documentation.
- iii) No proper record keeping and documentation system.
- iv) Non-involvement of the client at the design stage.
- v) Incomplete assessments.
- vi) Lack of collaboration and poor communication (information sharing).
- vii) Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.).

3. **Modern IT tools and applications** (Section 7.2.4, section 7.4.3, section 8.4.1 & section 8.4.4)

The most relevant aspect highlighted by KSA practitioners is the lack of awareness about modern tools for designing, progress reporting, information sharing and

collaboration. This creates problems with the support documents needed for claim settlement. In summary, there is:

- i) A failure to use modern information technology.
- ii) A failure to use modern technology and tools to collaborate and process information.
- iii) Missing centralised data processing and information management system.

4. **Competency building** (Section 7.2.1, section 7.2.2, section 7.2.4, section 7.3.1, section 7.5.1, section 7.5.2, & section 7.5.3)

A major factor highlighted through the interviews and surveys was the scarcity of a "skilled" labour force. Along with unskilled labour, it was also highlighted that the KSA construction industry has the disadvantage of lacking "appropriate skills" in "expert areas", including engineering branches, claim and conflict resolution, project management and legal aspects. In summary, the issues are:

- iv) Scarcity of skilled /unskilled workforce.
- v) Lack of specialised personnel (specialisation and expertise).
- vi) Inexperience contractors.
- vii) Behaviour (intent and attitude).
- viii) Lack of experts as well as expertise in conflict resolution.

5. **Robust Legal infrastructure** (Section 7.4.1, section 7.4.2, Section 7.5.2, Section 7.5.3 & section 8.4.8)

The issues /causes reinforcing the recommended improvement were discussed in section 9.6.3 "Claim management improvement" under "Robustness and readiness of Legal infrastructure".

9.7 Conceptual Framework:

Figure 9-2 shows the frame developed for the code of best practices. The starting point is the need for research that is the negative impact of claims on KSA construction industry performance. The literature helped identify the gap in knowledge regarding "KSA construction industry and its adopted practices at operational level". At the next stage, the literature and face-to-face interviews identified the causation factors/issues that were categorised.

The next step was the categories of areas needing improvement. This was followed by recommended improvements needed under each improvement category. The survey questionnaire then identified the recommended measures under each category.

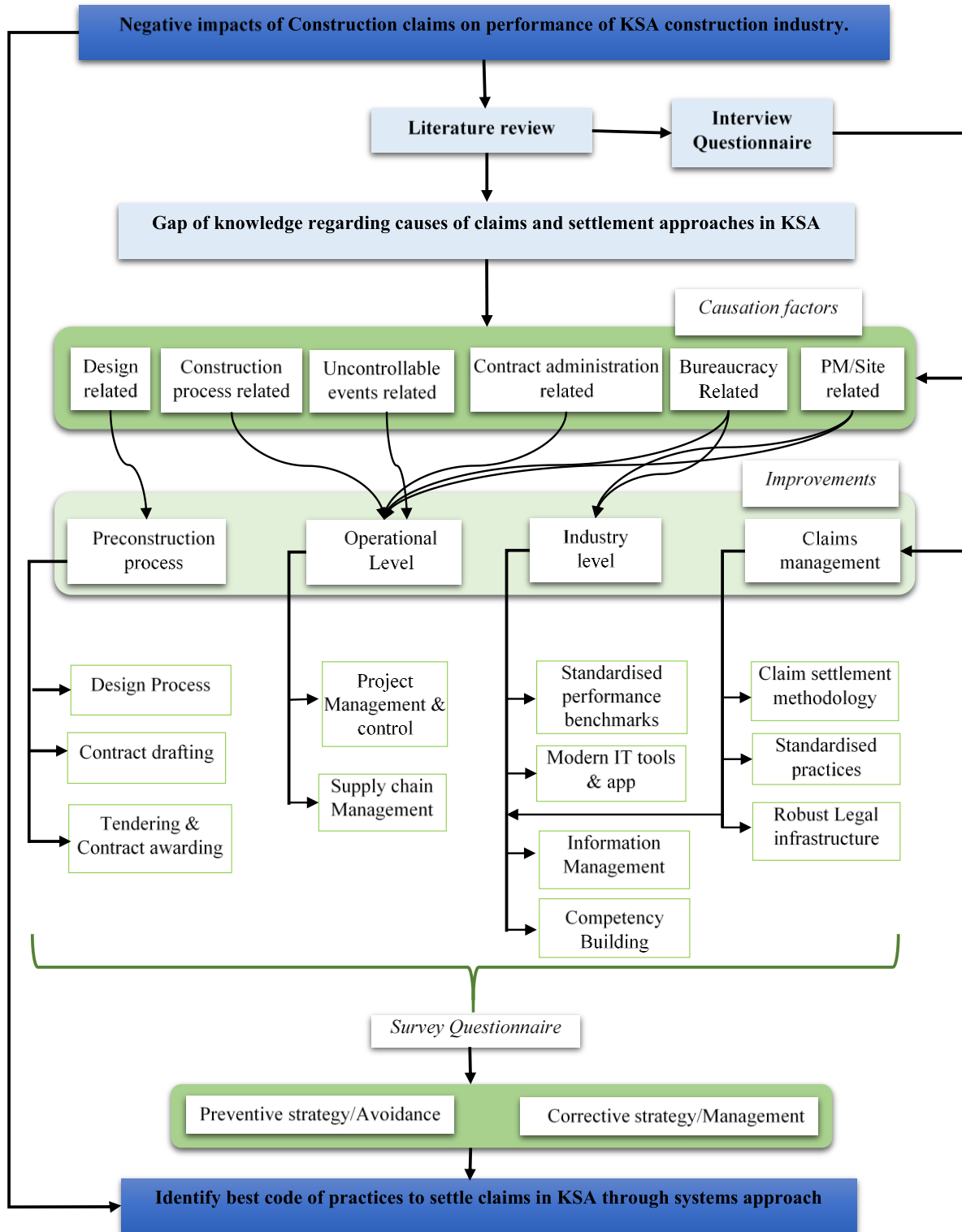


Figure 9-2 Conceptual framework to mitigate claim settlement in KSA

9.8 Code of best practice to mitigate the claim settlement process in KSA:

The code of best practice will present the measures or strategies that can be fostered in KSA to reduce the negative effects of the inefficiencies in the claim settlement process. The recommendations and measures are codified based the Olawale and Sun (2010) and Owusu-Manu, Asiedu & Adaku (2017) framework for prescribing mitigating measures. Their research framed the measures and strategies in the following categories

1. Preventive strategy.
2. Predictive strategy.
3. Corrective strategy
4. Organisational measures

For the purpose of this research, the categories to frame measures will encompass two dimensions of the process. Firstly, to "design practices that aim to avoid or prevent the "actual cause" from happening. This will be a *preventive* strategy to make the process itself an efficient one.

Secondly, to "design practices that aim to manage or correct the "problem" that has occurred. This will be a *corrective* strategy to manage/handle the problem to mitigate/lessen the negative effects.

For present research the measures will be

1. Preventive strategy.
2. Corrective strategy

The recommendation will be used to codify the measures to be considered to achieve the recommended improvement and populate the framework.

9.9 Development of the framework - Code of Best Practice to mitigate the claim settlement process in KSA:

The recommendations were ranked and categorised. This will help in populating the conceptual framework shown in Figure 9-2 in form of the relevant measures and strategies to achieve those improvements.

The claim management process needs improvement Figure 9-3 and Figure 9-4 show the complete process from causing factors to suggested improvements and associated recommendations.

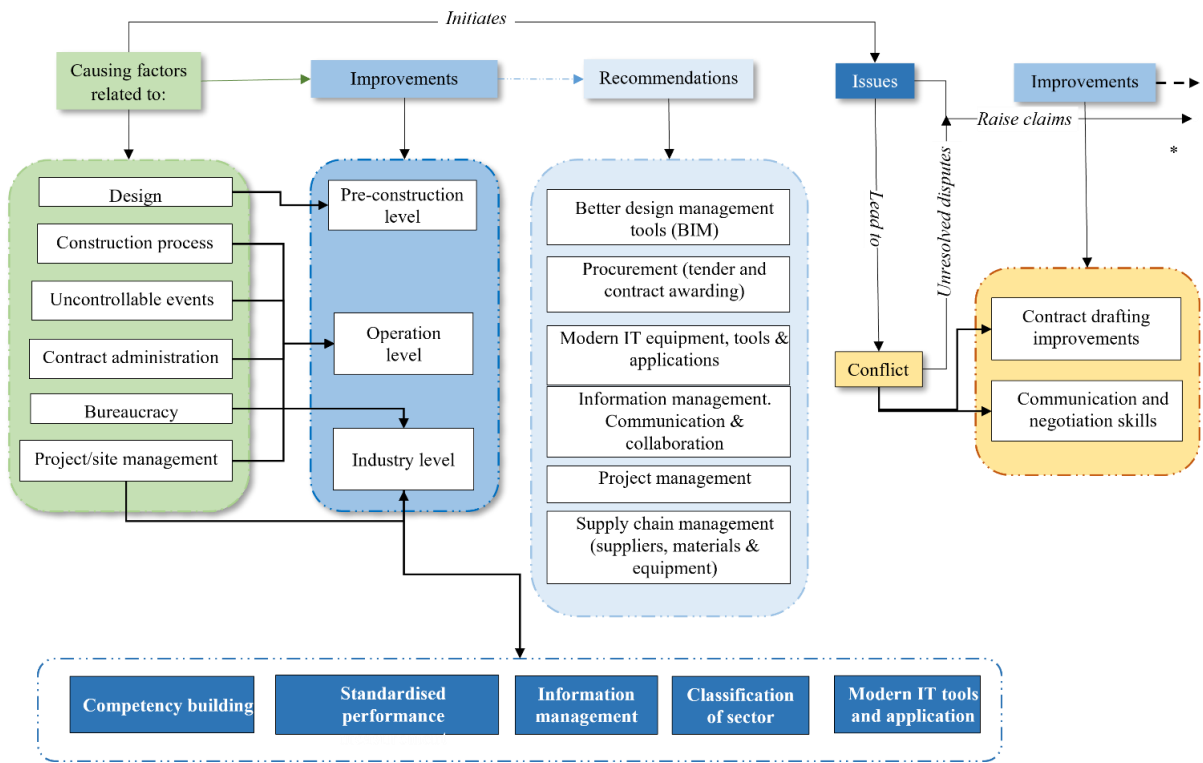


Figure 9-3 Claim management process needed alternatives and recommendations

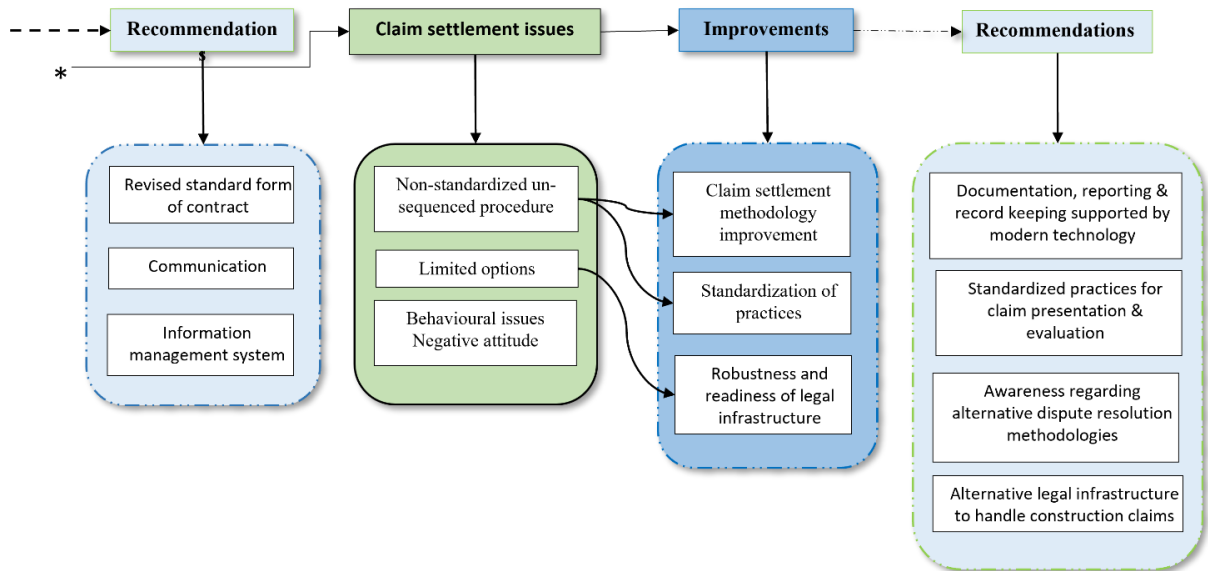


Figure 9-4 Claim management process needed alternatives and recommendations cont.

9.10 Improvements needed in pre-construction phase:

The pre-construction process initiates many issues that create disputes in the construction process. The findings presented three factors that are critical and need to be focused on for

improvement at this stage (section 8.4.4). They represent "information management", "contract drafting", and "bidding (tendering and contract awarding)".

Scope of work (statement of work) defines the works required in broad terms, including technical requirements, roles, responsibilities, project management details (issuing of payments, change controls, legal requirements), project schedule (expected duration, milestones, delivery dates, time limits) and reporting requirements (Designing Buildings, 2021). It is one of the foundations of the contract and establishes the baseline of rights and obligations and used to track progress.

The construction documents used for bidding are often the source of the problems in the implementation phase. "Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments)" is the most critical factor in the project implementation stage (Section 8.3.7).

Construction documents are part of the bidding documents and used to evaluate tender cost and bill of quantities, thus the most important part of the contract. The construction document stage is the third stage in design development, where the emphasis is on the preparation of construction documents that are to be used by the contractor. The architect and consultant collaborate to finalise minute detail to prepare construction drawings and specifications.

Claims often originate from changes in these documents and their effect on time and cost as indicated by the client to the contractor or as the contract terms state.

These three factors also indicate the underlying issues that affect the design phase. Communication and information management is the backbone of the design stage. The design documents become part of the construction document for bidding and later becomes part of the contract. The processes (activities) important to the pre-construction phase and where improvements are needed are:

1. Design
2. Tendering & contract awarding
3. Contract drafting

9.10.1 Design process improvement:

This was the most dominant process highlighted by the respondents that creates many problems in the construction phase as well as playing the main role in initiating claims in the design process.

At the implementation stage, any issues require rework, and is a major contributor to time wastage and schedule overruns, which eventually impact cost resources and quality milestones (Love and Edwards, 2004).

9.10.2 Recommendations to improve the design process:

Recommendation # 1 Specifications

Clearly state the specifications required at the early stages with consideration that perspective specification or performance specifications will suit the type of the project undertaken.

(Focus on improving RII = 0.86, ease of implementation in KSA RII = 0.62) (See section 8.4.5)

Measures to consider: (Preventive strategy)

1. Be precise about specifications. Either it is the end result or the way to get the end result. Perspective specifications suit design-bid-build, while for design-build, performance specifications are better.
2. The first step is to devise error prevention measures and undertake them as a continuous process in KSA. This needs a serious shift towards encompassing all major stakeholders, and the systems that are part of it, including people, organisations and project systems (Love et al., 2012).
3. Focus groups should be constituted to discuss and devise steps to "proactively identify" reasons of error and the appropriate preventive measures.
4. Error management is another process to be introduced to manage deficiencies in the design process employed in KSA. This means overseeing defects in design and working documents (Love et al., 2012) before implementation by involving specialists in design planning and reviewing the completion of construction documents.
5. Increase collaboration at the design phase, especially between architect and consultant.

6. Prepare detailed designs before proceeding (Ismail et al., 2012). This is important to develop specification appropriately explaining the graphical aspects of drawings and to keep variation minimum.
7. Finalise design specifications before the project implementation stage by modelling the design with the site conditions and recording outcomes.

Recommendation # 2 Change Orders (communication and documentation):

Manage owners' change requirements with improved communication and process documentation.

(Focus on improving RII = 0.8, ease of implementation in KSA RII = 0.56) (Section 8.4.5)

Changes in the design or specification need change orders. Changes need to be recorded and amended to the original contract document with details of services added or edited along with the cost being obliged from the client. This is one of the core reasons that generate claims and conflicts over claims if the client representative tends to reject or disagree with the contractor's request.

Variations are classified as directed and constructive changes (Fisk, 1997) where the former is the client directly instructing the contractor to perform works that are not specified in contract document or makes additions to the original scope and the latter are informal acts or modifications that are due to act or failure to act (Simpeh, 2012). Variation notifications are most important as they are used as formal amendments to modify the original contractual agreement (Sunday & Aigbavboa, 2017). Responsibility for variation orders mostly falls upon the consultants. Changes in specifications and scope initiated by clients and consultants are the most frequent events (Homaid, Eldosouky & AlGhmd, 2011).

The supervisor will prepare RFI and send it to the engineer. A deficient engineering design will require many requests for information (RFI) from the contractor to clarify the drawings. The inefficiencies of submitting the RFI is a core issue. The turnaround by the engineer depends on the project site and complexity and requires many checks. The process consumes time and has cost impacts, scheduling impacts and even the claims process during construction (Chester & Hendrickson, 2005).

Measures to consider: *(Preventive and corrective strategy)*

1. Before signing the contract, review the plans and specifications with all the stakeholders in the process. It is good to spend some time on clarification instead of issues later in the implementation stage. Clients, consultants, contractors and subcontractors should be engaged in this review process
2. Review contract before signing. There should be written clauses that address change orders and the process to handle them. Be precise and clear in writing about different aspects such as:
 - i. How modifications in the scope of work will be done.
 - ii. How cost of work will be calculated.
 - iii. Inclusion of equipment cost overhead cost, material and additional costs to facilitate change.
 - iv. Impact on schedule and delays that will occur.
 - v. Written change order format in the contract.
3. Avoid conflicting clauses. Make sure clauses on how new or additional work will be performed are clear. Act only after the written change orders or written notices with approval signed by all parties is given, and cost calculations agreed.
4. Plan impact of change orders. Plan the changes will all parties to have minimum impacts - subcontractors play a big part in this.
5. KSA should focus on implementing a change management plan. This gives a better strategy to plan the changes that could occur, the impact (either negative or positive) that will occur, issues that could be raised, cost and schedules, and contingency planning.
6. For a long-term strategy, start working on digitising the construction management programme with a change management programme. It will functionally streamline the change order activities and facilitate planning ahead to mitigate the negative impacts. Plan ahead with a construction management programme with functionality to deal with change orders, the change management process, and digitised and streamlined with the use of software (Procore, Monday.com, Autodesk construction cloud, smart sheet)
7. KSA needs to raise its awareness and knowledge about maintaining a proper change order log to organise change. Automation will help in maintaining a log of data regarding details about the organisation of change and impact, date, who created the change, its status (approved or not), and requests for quotes, purchase orders etc.

Recommendation # 3 Design tools

Better design tools should be adopted like BIM. The assessment of the site, material requirements and design modelling all need to be automated and well collaborated.

(Focus on improving RII = 0.8, ease of implementation in KSA RII = 0.5) (Section 8.4.5)

The flow of design is based on the transformation, flow, and value (TFV) theory of production (Koskela, 2000; Ballard et al., 2007). Design activity is not an isolated part of the big picture, it is embedded in a particular context involving technical aspects as well as social activities depicting causality (Koskela et al., 2014) and interpretation (Snodgrass & Coyne, 2013).

Measures to consider: *(Preventive strategy)*

1. Introduce BIM and such applications that can collate and collaborate information at all stages. Design is not a static activity. The design tool should incorporate the technical and contextual factors as feedback to adjust and disseminate information for further feedback and continuous adjustments.
2. KSA needs to focus on a shift towards design management and the structuring of information and its flow. This reduces uncertainty and, to some extent, eliminates unnecessary rework or non-value-adding work. To achieve this, an emphasis must be placed on coordination with social interaction, by say, introducing a design structure matrix, tool integration and partnering (Koskela, 2000). The design process should be undertaken through a team approach (Ballard & Koskela, 2009) in KSA, where interaction and feedbacks can get recorded and collaborated.
3. Plan out the design process to identify optimised ways to meet requirements.
4. Introduce better engagement at the conception phase of design, where interaction and feedback are critical to eliminating waste.
5. Perform requirement analysis to evaluate alternatives and shortcomings in design quality and value-added to the project at the conception stage.
6. An integrated design model could be used for KSA that incorporates analysis and rhetoric⁵ to facilitate technical and social design activities (Pikas, 2019).
7. The main factor is the value for the customer. Value loss should be eliminated; this is a big factor in KSA and plays a critical part. Introducing systematic requirements

⁵ the art of effective or persuasive speaking or writing, especially the exploitation of figures of speech and other compositional techniques. (Oxford Languages, 2021)

analysis, requirements flow-down and optimisation will help (Koskela, 2000). The industry should commit to quality function deployment and requirements management in such a way that value for the customer is upheld.

8. Raise awareness regarding value engineering, a process that creatively analyses the requirements to achieve functional aspects at the lowest costs possible. This includes capital, staffing, energy, and maintenance over the life of the project.
9. Raise awareness about robustness engineering and robust designs that have minimal effects from variations, including raw material and manufacturing conditions. (Ballard & Koskela, 1998; Pikas, Koskela & Seppänen 2020)
10. Consider options like Collaborative Design Management (CDM), where planning, teambuilding, coordinating (meeting), and constraints can be catered for simultaneously. (Fundli and Drevland, 2014).
11. Introduce material accuracy and quality requirements as part of the design process. Mandate these before finalising the bidding document so that bidding is more informed.

Recommendation # 4 Work breakdown structures (WBS):

Work breakdown structures should be incorporated with procedures to update data after changes. (Focus on improving RII = 0.8, ease of implementation in KSA RII = 0.86) (Section 8.4.5)

Included in this are workflow tools and business process management tools. For example, visual dashboards that use colour codes to display actions and responsibility.

Task management is the focus of the transformation from design input/requirements from the client to output (Ballard & Koskela, 1998). It is important to undertake the design phase as a "structured" process with tasks allotted to the right priority and responsibility, planned, tested and tracked to be synchronised at all stages. Work breakdown structures (WBS) helps in structuring these decomposed tasks in a visual manner aiding the control processes.

Measures to consider: (Preventive strategy and corrective strategy)

1. KSA design focus should concentrate on hierarchical decomposition and the simultaneous control of the task with methods like work breakdown structure, the critical path method, and organisational responsibility charts.
2. Visual control tools like process models, checklists, meeting templates and structures, visual controls, a classification system for design activities, BIM execution plan

(Pikas, Koskela & Seppänen, 2020) dashboards, are all options to consider for better hierarchical decomposition of tasks, control and status updates.

3. Consider project complexity and its interdependence levels to decide about the appropriate WBS system to use. Choose between a delivery-based (deliverables of project and scope) or phase-based WBS (final deliverable and five phases of the project). The visualisation of the project decomposed into activities helps to establish the order of activities, responsibilities, objective of activities, interdependence, proper resource allocation, cost estimation and status of the activity.
4. WBS is a part of the project management (PM) tool. Select the tools that fulfil the focal needs of the project performance. Prioritise the project needs, mark performance indicators, checklist the PM tool specification/utilities, and select the appropriate tool. PM tools have subtasks, project scheduling, dependencies, task management, tracking and reporting as primary functions. Many project management tools are easily available like Gantt pro, BIM360, Acculync, Jonas premier, Procore.

9.10.3 Tendering & contract awarding improvement:

A major factor of causes of dispute lies in the procurement method, evaluation of the tenders submitted and awarding of the contract. With the lowest bid being the selection process used in KSA, contractors tend to use the submission of well-managed claims to balance any loss of profit, which, if rejected by the client, causes disputes (Tan & Anumba, 2010).

9.10.4 Recommendations to improve the tendering & contract awarding:

Recommendation #1 Contract awarding:

Revisit the procedure of contract awarding. Introduce more technical screening so that contractors are selected according to their experience in the industry. (Focus on improving $RII = 0.86$, ease of implementation in KSA $RII = 0.78$) (Section 8.4.2)

. There is a need to revisit the contract awarding procedure. Selection based on the lowest bid can create many indirect problems that affect project progress, which includes delays in meeting the contract duration. Other impacts are high variations resulting in an increase in the final project cost, a compromise on quality, the adversarial relationship among contracting parties (Bedford, 2009), and increased number of claims, disputes and litigation (Herbsman and Ellis, 1992; Ioannou and Leu, 1993; El-Sayegh et al., 2020)

Measures to consider: (*preventive and corrective strategy*)

1. Define appropriate criteria (attributes) relevant to each project for the contractor's qualification and evaluation. (Banaitiene & Banaitis, 2006)
Restructure the KSA procurement system, including procedures to evaluate and select designers, contractors and consultants (Abdollahipour, 2008) such as bidding procedures, materials control, quality considerations and insurance and surety issues.

This is important to make the procurement system robust enough to handle the complexity of the modern construction project with sound quality and financial surety.
2. Consider multi-attribute decision modelling in the bid evaluation system. This can be performed in two ways.
 - i) Single criterion bidding systems.
 - Lower bidder system with its variations.
 - Non-lower bidder systems (including the averaged-bid methods).
 - ii) Multiple criteria bidding systems (multiple attributes).
 - Multiparameter bidding system.
3. Adopt a multi-parameter system in KSA, in which attributes like time, quality, surety, managerial safety accountability, competence, sustainability, green energy and efficiency are gauged along with the bid price or cost. Selection is done by aggregating scores or ranking of the bidders based on these attributes (Liu, Lai & Wang, 2001; Diekmann, 1981; Herbsman and Ellis, 1992; Nguyen, 1985).
4. The procedures should be transparent and clear about the evaluation criteria. It is either price, technical qualification, quality, or a combination of factors. The weightage to each criterion should be decided upon beforehand.
5. Make the quality assurance team a pre-requisite to the qualification of contractors, especially in the case of the lowest bid selection.
6. Mandate penalties, as well as incentives on scheduled completion of the project and strictly abide by its implementation.
7. Ensure the health and safety infrastructure of the bidder company is established at the time of evaluation as this is a major factor that affects the construction process
8. Flexibility in awarding the contract is much needed. Evaluate factors that are important and relevant to the nature of the project.

9. Consider the lifecycle cost analysis and value analysis instead of low cost only. Be clear and precise about surety bonds, including bid bond, performance bond and payment bond and their terms. Especially in the case of lowest bid selection, revise the bond to be able to tackle all sorts of situations and financial conditions.
10. Lay down principles to examine Abnormally Low Tenders.

9.10.5 Contract drafting improvement:

The ambiguities in the contract, especially with reference to obligations and entitlements, the processes and responsibilities, quality (including subcontracted work) and compliances and the construction document issues, create many conflicting problems in KSA, the standard form of contract is used in KSA was surveyed and two main issues were raised in the interviews/questionnaires: unfair risk allocation and the lack of provisions regarding claim submission, forensic analysis and evaluation.

Contractual claims are integral and an important feature of a construction project's life (Awad-Saad, 2017). The causes of claims are deeply embedded in contract documentation and the availability of information provided or not provided at the pre-contract phase (Hai, 2019). Contracts' basic purpose is to allocate rights, duties, responsibilities and risks between parties (Peckiene et al., 2013). Risks cannot be totally eliminated from a construction project. Either they are transferred to another party or shared based on the contractual conditions agreed in the contract. This is the conflicting core issue between the contracted parties (Andi, 2006) and one of the leading underlying causes of claims in KSA (Section 7.3.1)

9.10.6 Recommendations to improve the contract drafting:

Recommendation # 1: Revisit standard form of contract:

There is a need to understand the need for "flexibility" and "ease" so that more and more foreign companies could be attracted as well as upgrading local contractors. Some international forms of contract like FIDIC can be used to fill the gap and attract international firms to KSA. (Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.48) (Section 8.4.2)

Measures to consider: *(corrective strategy)*

1. The entitlements and obligations are one big part of the contract. They should be clearly defined in case of variations, changes, delays, claims.
2. Constitute a committee relevant stakeholders and officials from industry and government to review and plan robust changes to the standard form of contract used in KSA. It needs to be amended with reference to modern industrial needs with flexible approaches and transparent and clear clauses keeping intact the contextual factor of KSA. The exercise will result in changes that could be tested over some time and reviewed again to be updated, changed, implemented or discarded, involving all relevant stakeholders.
3. The standard form of contract has an express provision for contract administrators. In KSA, contract administration has many issues; one is the lack of expertise in this area. The contract administrator is generally the architect or engineer who are responsible for issuing instructing on variations (avoiding added anything to the contract). They also coordinate site inspections, chair progress meetings, and consider claims, issue completion/interim certificates, all of which are linked to possible conflict with contractors. There needs to be training for contract administrators to enable them to manage the process better as improvements and improve many claims and settlement issues.
4. Risk management needs to be understood and introduced in KSA. The parties involved need to be educated about all the risks associated with a project including capability, financial, technical, political, economic or societal factors. Risk allocation is the most important part of risk management, and clients and contractors need to negotiate this before implementation. The process of allocation requires parties to sit through risk identification, analysis and decision regarding methodology. The party who has the competency to manage the risk with minimum negative consequences will save resources on the project, mitigate the effects as well as benefit parties.
5. A "cooperative" decision-making technique should be adopted in the case of risk management in KSA. This enables parties to go through optimal choices leading to the desired outcome and, in a way, lead to a win-win situation bringing greater benefits. Optimised outcomes with fair and equitable distribution will account for the needs of all parties involved. (Shoubi & Barough,2012).

9.11 Operational level improvements (construction process):

Around 66% of the causes that give rise to difficulties and delays that cause conflicts arise in the implementation (construction) phase of the project. These are rooted mostly in the pre-construction phase. There is a strong cause and effect relationship between these two phases and so a preventive strategy at the pre-construction phase and a corrective strategy at the construction phase could be of great benefit. The section 7.2.1 showed the frequency percentages of factors creating disruptions including changes (45%), project management and control aspects (24%), site production processes (55%), (including implementation complexities - 45%), inexperienced contractors (36%) and project management issues (9%).

9.11.1 Improvements in bureaucracy role:

A very important dynamic of industry-level engagement in construction projects is bureaucracy (section 7.2.4 & section 8.4.2). Politics and power dynamics have a greater impact on the project processes, especially in public sector projects in KSA. The authority to enable or put constraints on actions significantly influence the decision-makers in the process. (Cashmore & Richardson, 2013). The survey respondents highlighted many of the negative issues that play a role, along with the time taken for permits/approvals and recommended reforming two broad categories, construction sector and adopted processes.

9.11.2 Recommendations to improve the role of bureaucracy:

Recommendation # 1: Reduce the impact of bureaucracy:

Industrial level initiatives are required to improve decision making and introduce approvals time frames in KSA (Focus on improving RII = 0.6, ease of implementation in KSA RII = 0.5) (Section 8.4.2)

Measures to consider: (*corrective strategy*)

1. Adopt flexible and transparent policies to support construction industry.
2. Develop better communication channels between government and industry.
3. Adopt modern technology tools to support efficient and timely approval and permits.

9.11.3 Project management and control improvements:

The vacuum of knowledge, planning and management which leads to delays in KSA is a decisive factor that points to the need for improvement. Seventy percent of practitioners believed that poor project management practices in KSA cause the most critical issues for

initiating contractual claims (section 8.3.6). Project success and project management practices (or competencies) have a strong relationship.

9.11.4 Recommendations to improve the Project management and control:

Recommendation #1 Standardise building practices

To develop standardised building practices to reinforce the project management competencies at the managerial levels in KSA

Measures to consider: (Corrective strategy)

1. More time should be allocated to project planning so that the changes encountered at the time of execution are minimal. Where changes are inevitable, they should be planned and incorporated appropriately, so that the contractor willingly accepts and executes them and they are able to maintain a reasonable level of profit.
2. Introduce a production planning and control system in KSA to smooth out the variations and negative iterations, align the foresight planning and reduce uncertainty. Modern technology tools can be beneficial in this regard, using BIM and cloud-based technology.
3. Consider improvement of the existing modelling techniques (e.g. Gantt chart and PERT) with methods like a design structure matrix, which can be beneficial to understand the systems and subsystem/activities (and their dependencies) involved. Better information exchange and feedback loops would be advantageous.
4. Plan the allocation of resources (Love et al, 2000) to help in diminish many delays and overhead costs.
5. Engage client. Increase communication in the design development phase to know requirements and decrease changes required.
6. Automation of planning can help by integrating different approaches to cope with uncertainty and coordination at the same time. Alternatives KSA can consider include integration of a design structure matrix and Last Planner (Rosas, 2013), design process communication methodology (Senescu et al., 2014) and modelling resource management in the building design process (Cheng et al. (2013).
7. The architects, planners, engineers, contractors and clients, all have a stake in the project and so coordination between them is core to implementing the design on the ground (Adejimi, 2005). This can be achieved by linking professional disciplines

(architect, structural engineer, project manager) and trade disciplines (the contractors' and sub-contractors, carpenters, bricklayers, plumbers) at the planning stage (Simpeh, 2012)

8. Quality control departments should be established across construction organisations, especially design organisations. The objective would be to have a check and balance on the quality of the work or services being provided, like verification of designs and ascertaining that quality standards are met. The appropriate sanction could be prescribed for defaulters who do not comply with the standards or design specifications.

9.11.5 Supply chain management improvements:

The most important aspect of construction is the supply chain, a network of organisations providing services or works that need to be planned for completion. This has a strong relationship with the contractor's capability and experience. Poor planning and lack of skills in contract administration creates more problems in the supply chain, causing delays and costs (Section 7.2.2, section 8.3.6 & section 8.3.7). Supply chain management is important for such a fragmented industry and is an efficient way to achieve integration, coordination and management of the services and work from suppliers to end users.

The ambiguities in construction documents create problems for both contractors and subcontractors. Finalised submittals by the design team after information sought from the general contractor (GC) (i.e. information requiring material, product samples, product performance data, shop drawings and mock-ups), working schedules and approved subcontractor and suppliers shop drawings form the basis of the project documentation.

9.11.6 Recommendations to improve the Supply chain management:

Recommendation #1 Supply chain management:

Supply chain management is an area that needs reform so that it could be managed properly. It needs the introduction of tools and applications along with prequalification of suppliers to retain a healthy pool. (Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.54) (Section 8.4.6)

Measures to consider: *(Corrective strategy)*

1. KSA construction industry needs to realign its processes along the supply chain to plan better and manage material and information flow at the right time to benefit and add value.
2. The lack of planning in KSA points to a lack of commitment and coordination within the chain of suppliers, sub-contractors to contractors. Induce coordination, collaboration and commitment within the supply chain (Akintoye et al.,2000)to improve "planning and control for scheduled activities, materials and services".
3. Supply chain management (SCM) needs to be effective to improve the quality of components and materials. This will help in reducing the claims arising out of substandard subcontracted work or supplied materials in KSA
4. The resource pool including subcontractors work, suppliers, contractors, material and subcontractors should be arranged on basis of some performance measurement system/parameters (Hong-Minh et al., 2001; Ofori, 2000). This will help in improving the resource planning and resource pool in KSA as well as motivate the parties within the supply chain to perform better and sustain the quality of their work and services.
5. Supply chain management (SCM) is a way to gain competitive and comparative advantages, with value generation, cost reduction and integration of all parties to satisfy all stakeholders. This will benefit the industry's overall "performance outlook" and "quality results".
6. SCM will help reduce logistics' costs (Vrijhoef & Koskela,1999), lead time and better management of inventory level to overall benefit the project milestones (Serpell & Heredia, n.d) and reduce the probability of claims occurrences.
7. KSA needs to develop and plan supply strategies as well as trading relations between subcontractors and suppliers. A healthy relationship will foster quality work and reduce reworks.
8. Many SCM tools are available, including Focus 9, Marg ERP9+ Supply Chain Software, Oracle NetSuite ERP. KSA needs to review these to compare their benefits and limitations and decide on the most suitable ones to meet their requirements.
9. KSA needs to raise awareness and train the stakeholders to be involved in adopting SCM. They all need to be assured and convinced of the advantages it holds for their job descriptions and performance.

9.12 Claim management improvements:

The practitioners believe that the claim settlement procedure followed in KSA lacks a sequential and disciplined approach. There is little use of modern IT tools to support the process and the attitude of the involved parties creates problems.

The standardisation of procedure requires a preventive strategy to identify ways to reduce the probability of the inefficiencies in the settlement process to happen. The procedural improvements need a corrective strategy to implement ways to reduce the negative effects being faced in the system.

9.12.1 Claim settlement methods' improvement:

The survey data showed that claim settlement in KSA needs robust amendments (section 8.4.9) as the process lack many features, including the limited resolution options, apprehension towards alternative dispute resolution options, lack/absence of any sequential or procedural process to reach a settlement, The respondents agreed that a standardised claim settlement procedure should be introduced in KSA (section 7.3.6).

The process requires efficient and effective management skills during the entire duration (not always unachievable in the construction industry (Akinradewo (2017))). KSA needs a systematic approach to assess claims to avoid conflict between the client, their representative and the contractor (Bakhary, Adnan, Ibrahim and Ismail, 2013).

9.12.2 Recommendations to improve the claim settlement methods:

Recommendation # 1: Develop sequential steps to undertake dispute resolution:

Amend the KSA standard form of contract with clauses to cover the sequential steps to be undertaken in case of dispute (Focus on improving RII = 0.9, ease of implementation in KSA RII = 0.8) (section 8.4.1).

Recommendation #2: Improve dispute resolution methods:

Amend the KSA standard form of contract with clauses to cover the dispute resolution methods that should be adopted. (Focus on improving RII = 0.9, ease of implementation in KSA RII = 0.72) (Section 8.4.1).

Measures to be considered: (*Corrective strategy*)

1. The KSA construction industry needs to raise awareness amongst the stakeholders of how to deal with conflicting situations. An important step is to guide them through the sequential steps of conflict resolutions; this will save time and cost as well as keeping relationships positive.
2. Develop an efficient claim management process by engaging claim experts (e.g. claim consultants) and focusing on clear specific contract clauses to deal with claims.
3. Introduce a structured way to manage construction claims (Bakhary et al.,2013). Effective claim administration involves a comprehensive step-by-step procedure for tracking and managing the claims submitted by the contractors (Tan and Anumba, 2010)
4. Restructure and format a generic framework of claim management in the context of KSA. The framework should encompass all defined six phases of claim procedure with their required fundamental steps and processes (Kululanga et al., 2001):
 - i) Identification
 - ii) Notification
 - iii) Examination
 - iv) Documentation
 - v) Presentation
 - vi) Negotiation

This framework will raise awareness amongst the stakeholders and help guide site staff to understand these six phases. A specialist committee needs to plan the process, how to communicate it and how to educate stakeholders.

5. The two important ways to understand and plan around disputes are (El-Sayegh et al,2020; Awwad, Barakat & Menassa, C., 2016; Martin & Thompson,2011; Haugen & Singh,2015 ; Tanielian,2013; Musonda & Muya, 2011 ; Wong & Maric, 2016)
 1. Dispute avoidance methods
 - Negotiation
 - risk allocation
 - early non-binding neutral evaluation
 - partnering
 2. Dispute resolution methods
 - i) Early resolution methods
 - Negotiation

- Conciliation
 - Mini-trial/executive tribunal
- ii) Late resolution methods
- Negotiation
 - Arbitration
 - Mediation
 - Adjudication
 - Dispute review boards
 - Litigation

The priority is dispute avoidance followed by dispute resolution methods. It is important to educate the KSA practitioners and regulate the process to encourage a sequential approach to disputes and claim resolutions.

6. Raise awareness and educate the stakeholders about dispute avoidance methods. This is the first step towards mitigating the negative effects.
7. The most important aspect of mitigating disputes, conflicts and claims is to understand what causes them. It is important to get different perspectives and raise awareness of the importance of communication and negotiation as key tools to resolve conflict situations.
8. Introduce time limits in KSA to settle issues like approvals or manage conflicts.
9. Negotiation and mediation should be encouraged to resolve claims in KSA for a win-win situation
10. Amend the claim settlement process with regulatory measures that can enforce sequential steps and processes to follow in case of claims.
11. Add clauses about ADR methods to be used in the case of conflicts and disputes
12. Advocate and raise awareness amongst practitioners about mediation and negotiation as ADR methods to adopt in KSA. This can be regulated with measures like adding clauses in the contract regarding dispute resolution that state that mediators or negotiators should be consulted. Mediation or negotiation panels could be regulated through the government to establish a stable system to mitigate claim settlement issues.

9.12.3 Standardisation of practices (claim presentation and evaluation):

There is no standard set of practices that are adhered to for claim notification, submission and evaluation. To some extent, these practices should be clearly established at an industry level and publicly available to understand and follow. The expert's opinion reinforces the need for claim submission and evaluation standards (section 7.4.2) relevant to KSA. The experts also suggested introducing standards to follow for claim identification and presentation. There is a need to set the standard for the claim settlement procedure (RII = 0.74) (section 8.4.1).

Many issues are highlighted that reflect upon poor management practices being observed to record the event properly and its impact on the settlement process. Claim management issues include lack of awareness and knowledge of the site staff to proactively detect claims, inaccessibility or unavailability of relevant documents (Bakhary et al., 2015), poor recording and keeping systems, ineffective documentation system, inaccurately-recorded information and failure to keep proper records or information not kept in writing (Jergeas & Hartman, 1995; Hai, 2019).

When an unexpected event occurs, the best step is to notify other parties as it can be the initiator of a claim. The process of filing claims and notification is important (Kartam, 1999) as it is the most significant aspect of the settlement process.

The claim procedure needs document preparation and site records (Vidogah & Ndekugri, 1997; Scott, 1995). They are the most important items for substantiating the claimant's entitlement and assessment (Scott & Assadi, 1999). This makes the processing time consuming (document preparation and identifying relevant information), but more critically, it requires site records being collected by inexperienced and unskilled on-site people (Vidogah & Ndekugri 1997; Scott, 1995)

9.12.4 Recommendations to improve the standardisation of practices (claim presentation and evaluation):

Recommendation # 1: Claim presentation:

Introduce a standardised process for claim presentation. The uniform process should be followed throughout the industry. For claim submission, requirement for supporting documents as well as other evidence should be universally known and uniform across the industry. (Focus on improving RII = 0.9, ease of implementation in KSA RII = 0.6) (Section 8.4.9)

Measures to consider: (Corrective and preventive strategy)

1. To design measures and to improve claim settlement in KSA, the foundation structure needs standardised practices of claim submission, forensic analysis, and evaluation across the industry. To do so, a committee could be used to discuss the process in detail and set the necessary standard practices.
2. Contract clauses should clearly express provisions regarding claim submissions, documentation and evaluation. Focus on training staff on standardising practices of claim presentation, especially on-site staff. Emphasise the four factors that define the activity being well documented - foreseeability, control, causation and legal responsibility
3. Educate the site staff about dispute identification, its notification and dispute recording. Adopt standard format for notices to be followed, as agreed in the contract.
4. Train on-site staff on how to record the information in a clear and proper format. Educate them about the format to follow and record-keeping especially site records. What constitutes an activity to be noticed and raise concern and how quickly it should be brought to someone's attention are important factors to know. Proactive claim detection needs site staff to be well trained and well aware of proactive measures.
5. Raise awareness and knowledge about the claim process. Educate stakeholders on the claim process.
6. Claims need to be properly constituted and completely and clearly documented with legal entitlement, up-to-date records to establish cause and effect, magnitude and responsibility and supporting documents to back up cost, work or changes
7. The formula for the computation of claims must be acknowledged on the basis of three important factors: suitability, reasonableness and reliability. This is important for fair evaluation, as well as upholding the trust of both parties and can be facilitated by meeting and negotiating the perspectives and creating consensus.
8. Organise a review committee in KSA to decide about the computation formula for claims. There is a need to develop consensus across the industry regarding setting out the base elements to decide on claim evaluations.

9.12.5 Robustness and readiness of legal infrastructure:

This is a broad level category that covers aspects of claim settlement methods and its improvement in the KSA industrial context. A major stakeholder in claim settlement is the

legal framework and so the support of (and need for) a robust legal structure is of utmost importance to reach a solution to conflicts as soon as possible. There are many hindrances in KSA, including the procurement law that limits the options of resolution methods available to parties, attitude of the parties, lack of awareness regarding options and lack of expertise. The fear of binding decisions and loss dominates the decision to seek alternative legal paths for help.

The experts in KSA believe that the legal system framework needs robust amendments to support the claim settlement procedure (section 8.4.8). 47% of the respondents favoured ADR methods to be used, while sixteen percent want to focus on judicial training with reference to conflicts, especially in the construction sector.

The recommendations ranked highly by experts to implement in KSA includes

9.12.6 Recommendations to improve the Robustness and readiness of legal infrastructure:

Recommendation #1 Dispute resolution boards:

Introduce dispute resolution boards that may involve judicial personnel as well as professionals from the construction industry. Focus on improving RII = 0.84, ease of implementation in KSA RII = 0.54) (section 8.4.8).

Measures to consider: (Preventive strategy)

1. Introduce dispute resolution boards (DRBs) and include their use in the contract as a process to resolve disputes proactively (Kamprath, 2014). The DRB should be formed after the contract has been agreed, with at least three impartial and independent professionals (it can vary according to need) with knowledge and experience of the construction industry and claim resolution. Regular meetings with project participants should be scheduled to provide updates about project progress and any issues.
2. Construction contracts should have clear provisions for dispute resolution,
3. Introduce a time frame to the process and initiate a special committee with time-stamped operations to settle the process and make decisions quickly.

Recommendation #2 Alternative legal framework support:

There is a need for an alternative legal framework dedicated to construction claims so that settlement is quick and robust. There can be time limits introduced to settle matters more

efficiently. Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.66 (section 8.4.8).

Measures to consider: *(Preventive strategy)*

1. Train and educate industry stakeholders about adopting a flexible approach towards resolution. Flexibility in decisions can generate win-win situations for both the conflicting parties (Further discussed in training)
2. Constitute a specialist committee or judicial committee specifically for construction-related conflicts and claim resolution. This will require training judicial experts on construction-specific conflicts and a resource commitment from government bodies to devise alternative smart solutions for more complicated, time-consuming issues.
3. Constitution of a committee with relevant government representatives, construction industry representatives and judicial representatives to be briefed on the problems and to devise alternative solutions. Follow a new concept development cycle, with brainstorming sessions to develop the best legal support structure through concept building, designing, planning, implementation and reviewing. This session can be extended over time as a regular learning exercise to customise practices in the context of KSA and its geographical areas.

Recommendation #3 Judicial Training:

Judicial Training is very important regarding the construction industry and its disputes.

Focus on improving RII = 0.76, ease of implementation in KSA RII = 0.48 (section 8.4.8)

Measures to consider: *(Preventive Strategy)*

1. Train law firms about construction industry conflicts as suggested by sixty-seven percent of the experts (Section 7.5.3).
2. Reform legal system in KSA to support claim settlement in the form of the legislative framework to regulate the procedures for claim settlement. Impose fines and statutory punishments in case of non-compliance with the set standards or procedures laid down.

9.13 Industry-level improvements:

An important part of the conceptual framework are the "broader industry reforms" aimed at improving the efficiency of the sector. The underperformance of the industry and its causes is

highlighted in the literature. The respondents highlighted many factors in KSA, where a focus on improvements is needed in terms the industry as a whole.

There are barriers like limited settlement options (KSA procurement law), the lack of a legislative framework, lack of experts in conflict resolution, behavioural barriers, failure to incorporate modern IT tools and a lack of awareness and education about ADR and conflict resolution methods, This needs industry-level initiatives to instil understanding and trust in the practitioners to adapt changes.

The awareness and education regarding conflict resolution and the benefits of timely resolution need to be advocated at the industry level. Stakeholders of the KSA construction industry need to raise awareness about alternative legal structures and their importance to a quick resolution. Industry-level commitment is needed to equip the construction sector with modern IT tools and applications. This needs comprehensive competency building structures.

9.13.1 Standardise performance benchmarks and classification of the sector:

Many practitioners have shown their dissatisfaction over the performance of the KSA. To gauge performance, it is important to set standards and a benchmark for comparisons. The KSA construction industry has no set performance measurement system, nor is there any publicly-available information regarding standardised practices. The sector needs to classify itself and dig deep into improvement by setting performance measurement standards.

Key performance indicators (KPI) using strategic, tactical and operational metrics are important to control and measure the processes in construction. Fourteen KPIs, including time cost, quality, requests for information, participation and proofing (Kristensen, 2013), quality of design and exchange of information (Knotten & Svalestuen, 2014), may be used to gauge performance.

9.13.2 Recommendations to standardise performance benchmarks and classification of the sector:

Recommendation # 1 Performance measurement system:

The construction industry in KSA needs to implement a broader performance measurement system. That system should introduce the guidelines to implement the project

and recommend benchmark standards (especially for public sector projects). (Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.74) (Section 8.4.6)

Measures to consider: *(Corrective strategy)*

1. Organisational restructuring is needed as a broader aspect of performance improvement in KSA.
2. Project management competencies need to be standardised with the contractor playing a key role. The contractor's eligibility should be gauged with reference to a benchmarked competency matrix for the project, which should be developed with reference to project-specific criteria
3. Consider different measurement systems to implement in KSA to have better control over performance. Standards and benchmarks are tools for improvements that need to be established and then followed.
4. Establish a success measurement model (Khosravi & Afshari, 2011) in KSA to fulfil two objectives, 1) provide a success index for completed projects to be used for comparison with each other and 2) to establish benchmarks for future improvements in the execution plan. The success index will calculate project success on five criteria: time, cost, quality, health and safety and client with an allocated percentage that contributes to performance (Gwaya, 2015)
5. Competency and competency building have been a long-term requirement for the KSA construction industry, involving knowledge, skill and behaviour. Standard operating strategies or the skills are needed to manage the project focus around these clusters starting with the gap in contractors' eligibility. With reference to this competency Tricia (knowledge, skill and behaviour) should be analysed first. In the second step, there should be a focus on deficiencies in their capability to develop their management level (Radujković & Sjekavica, 2017).
6. The localisation of management competencies criteria and project success factors both need to be evaluated and developed with reference to social values, conditions and needs of the local community (Tabassi et al., 2018), especially in KSA. Construction projects should be taken in the context of their socio-economic perspective and environmental ecosystem. This will evaluate the project success and contractors' performance on quantifiable factors that can be associated with further improvement.

Recommendation #2 Grading of contractors:

Standardise the measures and introduce a universal scale of performance for them. A standard-based grading model should be introduced to rank contractors according to their specialities, expertise, performance and projects undertaken (Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.62) (Section 8.4.6)

Recommendation #3 Standardise the construction sector (certifications and grading):

Standardising the sector with the use of certification and grading for contractors will help to assemble a pool of competent contractors, keeping the quality intact and up to the mark. (Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.6) (Section 8.4.2)

The pre-qualification of contractors for most of the public projects in Saudi Arabia depends upon a weak low-bid selection method and a contractors' classification system (CCS) to gauge contractors' capabilities and performance (Almutairi et al., 2018)

The CSS was established in 1973 and was administered by Contractors Classification Committee. From 1979 to 2004, the Ministry of Housing and Public Works took over the responsibility. It was handed over to The Ministry of Municipal and Rural Affairs (MOMRA) in 2004. (MOMRA, 2016). There are 29 fields and five grades.

The structure and flow of the CSS was disconnected from contractor performance because of a gap of four years between classification processes without any performance monitoring activity. This led to an absence of a continuous and accurate method of measuring the actual performance of contractors, a process that is very complex and lacks transparency (MOMRA, 2014)

There are certain loopholes in the CSS in terms of its ability to measure performance. Its capacity to properly and accurately assess and reflect the contractors' capabilities and performance are very questionable (Almutairi et al., 2018; Alsugair & AbuThnain, 2011; MOMRA, 2014) and its evaluation process is quite subjective (Yeboah, 2008). There is no means of motivating contractors to improve their performance (MOMRA, 2014). The KSA classification system is one of the most relevant causes of initiating problems leading to conflicts and disputes between the parties (Mahamid, 2014).

Measures to consider: *(Corrective strategy)*

7. Revisit the current grade model and edit grades and the minimum level budget requirements to include unclassified contractors as well as add grades to compensate mega projects.
8. Introduce a performance evaluation process in the system. (MOMRA, 2014)
9. Motivate contractors to improve performance by close and continuous interaction with the system.
10. Motivate contractors to increase their participation
11. Modify the criteria. Financial, technical and other criteria need to be revisited to better reflect modern needs. One option is to introduce the DuPont Model(DuPont identity) and Asset turnover in financial criteria (MOMRA, 2015).
12. Introduce performance measurement and performance benchmarking models as a primary objective for self-improvement aimed at comparing the performance relative to one another (El-Mashaleh, Minchin, & O'Brien, 2007). This will increase the motivation to perform and improve
13. In classification and grading, add working capital as a reflection of short-term financial health and efficiency as well as the ability to clear obligations and check liquidity in the developing business (Almutairi et al., 2018). This will help identify contractors who have a stable financial outlook.
14. Adjust the requirements of the criteria in the classification system such as equipment criteria, quality management and sustainability measures.
15. Evaluate contractors' capabilities and produce assessment results regularly. Introduce performance appraisal systems that incorporate these assessments and upgrade the evaluation criteria and outlook of the contractor.
16. Introduce a contractor development programme framework as a deliberate and managed process to achieve targeted development and improve contractor performance with respect to their grading status, performance and quality (Kuju, 2017).

9.13.3 Information management (communication and collaboration):

Information management is important to make informed decisions. There is a need to have improved communication and collaboration tools right from the conception phase as most of the causes for conflicts arise at this stage.

A construction project with its multi-disciplinary design team needs to adjust and adapt to different needs at the right time to achieve added value. To shape the project culture and define clear responsibilities, real-time information and transparency are important dynamics to consider (Knottena et al., 2015)

Collaboration, cooperation, and coordination are three Cs that are inevitable for design and engineering processes to deal with today's construction complexity (Pikas, Koskela & Seppanen, 2020) and a lot of time can be saved by effective information management (Flager et al., 2009)

9.13.4 Recommendations to improve information management (communication and collaboration):

Recommendation # 1 Centralised information management system:

Introduce an electronic system to accumulate all available information regarding a project accessible to all stakeholders. The system should be centralised in terms of its information updating and sharing. (Focus on improving RII = 0.8, ease of implementation in KSA RII = 0.84) (Section 8.4.2)

Recommendation # 2 Control, monitoring & centralised information management system:

Mandate project management standards, including control and monitoring systems. There should be a centralised system to accumulate information regarding the progress of each contractor and project on these standards. (Focus on improving RII = 0.82, ease of implementation in KSA RII = 0.6) (Section 8.4.6)

Measures to consider: (Preventive Strategy)

1. Install information and communication technologies for quick decision-making, validation and verifications. Consider and train people with modern IT tools like information management systems (IMS) and enterprise resource planning (ERP) to improve communication.
2. The design process and construction process need to be integrated (Oyewobi & Ogunsemi, 2010) for information management to mutually benefit the project progress (Adejimi, 2005) and the day to day management of the project (Ismail et al, 2012).

3. The exchange of information and the transformation of information to ideas and solutions needs interaction among the design team and to cater for any issues originating from these interactions (Knottena et al., 2015). This needs to be planned, followed up and the complexities of the interdependencies that might occur due to information exchange predicted. For such a reciprocal processes, concurrent engineering (CE) and integrated concurrent engineering (ICE) can be powerful tools (Chachere et al., 2004). For KSA, the need is first to raise awareness and educate professionals for such terms in business and their implementation. This needs a serious focus at governmental level to promote education and certifications in such business strategies.

Complexity, interdependence, constraints to diminish and ubiquitous iterations are all part of a construction project. This continuous cycle needs collaborative and continuous re-planning. In recent times tools like the Last planner were advocated to collaborate project systems and sub-systems (Hamzeh et al., 2009; Rosas, 2013). The KSA construction industry needs to acknowledge the support of collaborative project management, which included master and phase scheduling, forward and commitment planning and learning. This can help in many ways to predict workflow and rapidly learn from real-time collaboration to continuous improvement, and help reduce the conflicting situations with a probability of claim disputes happening.

4. Devise a system for the top-down or bottom-up flow of communication in the organisational structure to collaborate actions. Communication is support for project success; early clash detection can save many resources (Khanzoode et al., 2008; Clemente & Cachadinha, 2013). Communication with the team members is of utmost importance, it is either asynchronous or synchronous. Synchronous communication needs a direct flow of information like face-to-face meetings, telephone, virtual meetings. While synchronous communication is the remote flow of information like emails, drawings, models, reports. Tools like BIM can be utilised for asynchronous as well as synchronous communication in KSA.
5. Start active engagement of the relevant parties' right from the conception phase. The analysis of requirements, alternatives and needed adjustments could be communicated before the implementation phase to save time and cost and quality issues.

9.13.5 Modern IT tools and applications:

Inadequacy of the IT tools used in KSA, and a lack of awareness and education regarding modern operation tools are significant factors in the decline of industry output/productivity. The application of advanced modern tools helps improve project planning, management and control through centralised information management.

9.13.6 Recommendations to improve use of modern IT tools and applications:

Recommendation # 1 Communication and collaboration tools (modern IT tools and applications):

Introduce better tools to the construction industry for collaboration and communication.

The use of modern technological tools can help in making processes transparent as well as quick (Focus on improving RII = 0.8, ease of implementation in KSA RII = 0.76) (Section 8.4.2)

Measures to consider: (Preventive strategy)

1. The KSA industry needs to consider better planning and communication tools such as a design structure matrix in order to understand all systems and subsystems, their activities, interdependencies and feedback channels.
2. Raise awareness and knowledge about modern tools like 3D modelling, Auto CAD, Revit. Train people to understand their benefits and use them efficiently. BIM integrates structured and multidisciplinary data to produce a digital representation of an asset across its lifecycle, from planning and design to construction and operations.
3. KSA needs to shift towards better modern tools for digital transformation in the architecture, engineering, and construction (AEC) industry to create, manage and integrate information.
4. Introduce electronic system and centralised data processing for quick retrieval and verification of records to support the claim settlement process.
5. Use modern technology and tools to collaborate and process information. This will increase the collaboration on decisions and so decrease the probability of errors and clashes over misinformation or non-updated data. It will support the notification process.
6. Encourage the use of modern IT tools that can help in recording site data and provide support documents that could be trusted by both parties and provide legitimacy to the process.

7. Tablets, drones, smart contracts, virtual and augmented reality, artificial intelligence and machine learning, and big data are the newest trends in the construction industry to transform and restructure. These are all useful for claim settlement procedures to mitigate the negative impacts.
8. SCM is a tool to transform information dissemination and communication. KSA should consider a policy shift towards adopting and adapting to such tools for more efficient information and collaboration management.
9. Educate industry stakeholders in error management. At the project level, this includes incorporating integrated procurement methods, better design tools like BIM and CAD.

9.13.7 Competency Building:

The KSA construction industry faces a scarcity of skilled labour; it is a major dilemma in terms of conflicts. Poor craftsmanship raises quality issues and reworks, with cost and time implications. Contractors raise claims to balance out the possibility of the client (or their representative, often contract administrators) might reject cost and time adjustments. Similarly, they may be dissatisfied with progress or quality and disagree over issuing interim and completion certificates. Analysis of the frequency percentages of causes revealed that the lack of skilled workers accounts for around fourteen percent of causes generating claims in the construction phase in KSA (section 7.2.1). Fifty-five percent (55%) of underlying causes triggering claims relate to the site production process, which includes inexperienced contractors (36%) and unskilled workforce (9%) (Section 7.3.1). The lack of experts/expertise in conflict resolution is a major barrier in the settlement process (Section 7.5.2).

The lack of awareness and knowledge regarding modern IT tools, conflict management and project management practices also stand out as sourcing problems that manifest causes for disputes and conflict as well as poor claim presentation in KSA.

9.13.8 Recommendations for competency building:

Recommendation # 1 Training:

Start competency building and training programmes in KSA for all involved stakeholders of the industry focusing on behaviour/attitude and professional standards. This will make them more aware of new trends, technological advancements, and technological needs of

the modern-day world (Focus on improving RII = 0.8, ease of implementation in KSA RII = 0.52) (section 8.4.2)

Measures to consider: (Preventive Strategy)

1. The KSA construction industry needs to equip itself with modern tools and standard practices and work on the workforce's competencies. There is a need for training programmes for competency building, project management, information technology and above all, behavioural aspects of performance.
2. An important aspect of the construction industry in KSA is the commitment to developing infrastructure to align with the Vision 2030 programme. This should be taken as an opportunity to upgrade the skill level of the local workforce, including managerial level personnel, leading to a good infrastructure for skill force development in KSA.
3. Certificate programmes should be introduced.

Recommendation # 2 Behavioural approaches:

Run seminars on behavioural approaches and handling of disputes at workplaces to raise awareness and acceptance of the changes needed. (Focus on improving RII = 0.88, ease of implementation in KSA RII = 0.64) (Section 8.4.7)

The wide differences in interests amongst the stakeholders makes disputes and conflicts unavoidable in a construction project (Yiu and Cheung (2006). Unsuccessful communication, unfair behaviour and effects of psychological defences account for the major conflicting situations in the industry. (Mitkus, 2010; Miktus & Miktus, 2014)

Negation (subconscious effort) often is triggered to safeguard the self-esteem, self-respect and moral integrity of the person even in situations where the "act" in itself has moral obligations (Ketola, 2006; Brown & Starkey, 2000). Opportunistic behaviour makes disputes and their resolution a complex human behavioural issue (Mitropoulos and Howell, 2001)

Measures to consider: (Preventive Strategy)

1. Adverse effects of construction disputes impact project objectives and place a strain on the relationship between stakeholders (Jagannathan & Delhi, 2019) acting as a barrier to successful completion (Patil, Iyer & Chaphalkar, 2019).

2. How to handle disputes and behaviour management is rarely talked about due to KSA culture and stakeholders' attitudes; behaviour management needs to be discussed in KSA.
1. Focus on behaviour issues aspects. Developing a culture of professionalism, good management styles, team building and teamwork.
2. A reward system, feedback system and job profile designs (job descriptions) can motivate and reinforce positive behaviour.
3. Cognition, behaviour, motivation and learning are four aspects of people-related error management (Love, Lopez & Kim, 2014). It is important to step up and restructure the organisational development in KSA by considering these four aspects.
4. Induce learning organisation behaviour.

Recommendation # 3 Conflict management:

Training in conflict management skills can help to foster a healthy work environment. Arranging conflict management training can make stakeholders aware of conflicts, their causes, and ways to handle them in non-adversarial ways. Awareness is the first step towards education. (Focus on improving RII = 0.84, ease of implementation in KSA RII = 0.7)
(Section 8.4.7)

Measures to consider: (Preventive strategy)

1. Devise an action plan to implement alternative ways to settle conflicts in KSA.
2. Raise awareness about trusting the non-judicial system and credibility and legitimacy of the decision binding.
3. Lack of experts, as well as expertise in conflict resolutions needs to be addressed by introducing training, certificates or courses in conflict resolution methodology
4. Raise awareness of ADRs - Practitioners felt that awareness about ADR is the most critical issue in its adoption. Seminars, pamphlets, workshops as well as policies can be devised to encourage adoption of these changes.
5. Advocate and raise awareness amongst practitioners about mediation and negotiation and dispute avoidance methods.

Recommendation # 3 Skill and capacity building:

Introduce skill-building courses at all levels from site to management with Ministry involvement. Compulsory certification programs for those wanting to work in the industry would address some of the present issues. (Focus on improving RII = 0.84, ease of implementation in KSA RII = 0.68) (Section 8.4.7)

Measures to consider: *(Preventive and corrective strategy)*

1. Management competencies are important to achieve a desirable long-term vision successfully. The need in KSA is to raise awareness and education in the contractors' community in this regard. Government level initiatives like seminars, training and workshops could be organised to motivate the contractor's community and develop their respective knowledge.
2. The need is to impose knowledge acquiring learning opportunities in the form of job training and experience gaining. Develop a culture of the learning organisation. This needs serious inputs/attempts/actions from the government level layer.
3. Introduce training in business management for contractors. Build knowledge regarding pricing structure, contractual rights and obligation, management techniques and the technical deficiency (Martin, 2010), local laws regarding construction work and labour and cash flow (financial management). Training can be scheduled as a workshop (some days) or training certificates.
4. Some policies should be advocated to develop contractor skills to the management level (Kuju, 2017). Introduce Leadership programme, enterprise development and performance improvement Programme. These should be shaped to promote training and technical advice for contractors with respect to projects and successful management of projects (Kuju,2017)
5. Government and higher institutions can sponsor training and certification programs (in different areas of construction management) and even research programs to improve the industry outcome.
6. The use of new and better tools and IT applications need government level initiatives. It needs facilitation to adapt to new technologies by encouragement and training.
7. Mandate certificates or refresher courses for working in the industry. Government bodies can facilitate building such certification centres.
8. Start training certificates, workshops or classroom training for unskilled labour to be proficient in handling construction work (lesser reworks) as well as conflicting

situations (better record-keeping, support claim presentation)—on-site train staff about record-keeping and notifications.

9.13.9 Robust Legal infrastructure:

These measures were discussed in section 9.12.5 under heading “Robustness and readiness of legal infrastructure”.

9.14 Summary of the cause, suggested improvements and recommendations categories:

The Table 9-2 shows the summary of the cause factors, the suggested improvements for those categories, suggested recommendations and the measures to achieve those recommendations.

Improvement category	Process needing improvement	Recommendations	Summary of measures
Pre-construction	Design	<ol style="list-style-type: none"> 1. Specifications 2. Change Orders (communication and documentation) 3. Design tools 4. Work breakdown structures (workflow tools and business process management tools. Visual dashboards like colour codes to display action items and responsibility) 	<ol style="list-style-type: none"> 1. Precise specification 2. Devise error prevention and error management measures 3. Estimate Impact of change and Manage change order log as proper record keeping 4. Introduce application as BIM that can collate and collaborate in dynamic manner. Introduce Collaborative design management 5. Introduce Material accuracy and quality requirements as part of the design process 6. Introduce visual control tools and select appropriate WBS to use in project
	Tendering & contract awarding	<ol style="list-style-type: none"> 1. Contract Awarding 	<ol style="list-style-type: none"> 1. Define appropriate criteria and consider multi-attribute decision modelling in bid evaluation 2. Adopt multi parameter system with attributes considered important for project
	Contract drafting	<ol style="list-style-type: none"> 1. Revisit Standard form of contract 	<ol style="list-style-type: none"> 1. Adopt corporative decision-making process 2. Clearly define entitlements and obligations 3. Introduce provisions regarding contract administration and risk management
	Bureaucracy and Governance issues	<ol style="list-style-type: none"> 1. Bureaucracy role improvements. 	<ol style="list-style-type: none"> 1. Government policies to support industry and especially quick decisions making 2. Better communication channels between industry and government

Operational level (PM & Control)	Project Management and Control	1. Project Management and Control Improvements	<ol style="list-style-type: none"> 1. Give more time for project planning. Automate planning to tackle uncertainty. 2. Improve modelling techniques with design structure matrix and good for information exchange. Link professional disciplines with trade disciplines. 3. Plan resource allocation.
	Supply chain Management	1. Supply chain Management	<ol style="list-style-type: none"> 1. Introduce supply chain management and train stakeholders to adopt to new methods 2. Introduce performance measurement parameters for supply chain pool
Industry-level	Standardised Performance benchmarks & classification of sector	<ol style="list-style-type: none"> 1. Performance measurement system 2. Grading of contractors 3. Standardise construction sector (Certifications and grading) 	<ol style="list-style-type: none"> 1. Establish a success measurement model. 2. Establish standards and benchmarks as tools for improvements to be followed 3. The localisation of management competencies criteria and project success factors are important for future improvement. 4. Revisit the current grade model. Modify the criteria as per modern needs. 5. Introduce performance measurement, performance evaluation and performance benchmarking models for constructors classifications and grading
	Information Management (communication & collaboration)	<ol style="list-style-type: none"> 1. Centralised information management system 2. Control, monitoring & centralised information management system 	<ol style="list-style-type: none"> 1. Install information and communication technologies for quick decision-making, validation and verifications. 2. Train people with modern IT tools like information management systems (IMS) and enterprise resource planning (ERP) to improve communication. 3. Devise a system for the top-down or bottom-up flow of communication in the organisational structure to collaborate actions.
	Modern IT tools and applications	1. Communication and collaboration tools (Modern IT tools and applications)	<ol style="list-style-type: none"> 1. Raise awareness and knowledge about modern tools like 3D modelling etc 2. Adopt the newest trends in construction industry like tablets, drones, smart contracts, virtual and augmented reality, artificial intelligence and machine learning, and big data. 3. Train and encourage the use of modern IT tools that can help in recording site data and provide support documents.
	Competency Building	<ol style="list-style-type: none"> 1. Training 2. Behavioural approaches 3. Conflict management 4. Skill and capacity building 	<ol style="list-style-type: none"> 1. Focus on behaviour management, conflict management and learning behaviour to induce motivation 2. Devise an action plan to implement alternative ways to settle conflicts 3. Train in conflict management 4. Mandate certificates or refresher courses for working in the industry 5. Start training programs in PM, IT, Legal framework, conflict management and business management. 6. Start training certificates, workshops or classroom training in different areas of

			competencies required at broader level in KSA.
	Robust Legal infrastructure	1. Dispute resolution boards 2. Alternative legal framework support 3. Judicial training	1. Same as “Robustness and readiness of Legal infrastructure” in “claim management method”.
Claim management	Claim settlement methodology improvement	1. Sequential steps to undertake for dispute resolution 2. Dispute resolution methods	1. Restructure and format a generic framework of claim management 2. Introduce time limits 3. Educate and raise awareness about ADR, dispute avoidance and dispute resolution.
	Standardization of practices	1. Claim presentation	1. Train site staff about dispute identification, its notification, dispute recording, record-keeping especially site records 2. Contract clauses should clearly express provisions regarding claim submissions, documentation and evaluation 3. Claim computation formula and evaluation need to be standardised across industry and made public.
	Robustness and readiness of Legal infrastructure	1. Dispute resolution boards 2. Alternative legal framework support 3. Judicial training	1. Construction contracts should have clear provisions for dispute resolution 2. Introduce a time frame. 3. Introduce dispute resolution boards (DBRs) and reform legal system to support quick decisions. 4. Train and educate industry stakeholders about adopting a flexible approach to the process. 5. Train law firms about construction industry conflicts. Adopt alternative ways to resolve conflicts including dispute resolution boards.

Table 9-2 Summary of improvement categories, needed improvements, recommendations and measures

9.15 Summary:

The categories of issues/causes included Design, Construction process, Project management, Contract administration, Uncontrollable events, Bureaucracy and governance, Industry level, Claim settlement. These were aligned to categories of requiring improvements that included Pre-construction process, Construction process, Claim settlement process and Industrial Level process. The needed improvements under each process were identified.

The measures or recommendations that can be fostered in KSA to reduce the negative effects of the inefficiencies in the claim settlement process were then drafted as preventive or corrective strategy or both under each needed improvement area. Summary of improvement categories, needed improvements, recommendations and measures were presented at the end.

CHAPTER 10: CONCLUSIONS

10.1 Introduction:

The chapter will highlight the findings from the research. It will present the framework that represented the measures to improve the claim settlement process in KSA. The chapter will also present the objectives that were achieved, as well as the limitation and recommendation for future research.

10.2 Introduction to research:

This research aims to develop a framework for a code of best practice to mitigate the claim settlement procedures in KSA. It codifies practices aimed at the efficient handling of claim settlements on KSA construction projects. It does not profess to have a fully tested and working code, the contribution to knowledge is the first step in a long journey to the development of a working code developed by the KSA industry in collaboration with the public sector for use in the KSA.

Delays, disruptions, and claims for reimbursement and increases in project duration seriously impact the cost, time, and quality of the project, along with creating effects that hinder the professional relationship. Therefore, the lack of a methodological approach to settle disputes and claims is of utmost importance keeping in view the resources consumed in the exercise, including cost, time, and adversity of relationships.

The principal conclusions can be summarised as:

- The current system of contractual claim settlement lacks a standardised approach in the KSA. Contractual claims are an ongoing process throughout any construction project, which can involve many claims because of the long duration of the project, hence speedy settlement is very important. The claims process is assumed as being linear and sequential, whereas it is non-linear and leads to complexity of the settlement process.
- Claims are often influenced by the blame culture in the construction industry, blame being based upon poor performance of the construction team or the client design team. Claims should be settled based upon mutual respect, understanding, and the maintenance of good working relationships.
- The settlement process needs improvement, a better understanding is needed of the causation of claims. The research showed that the root causes of claims lie in the

design of the procurement process. Insufficient and poorly developed design information ultimately leads to contractual claims because it disrupts the site production process. Other factors impinge on causation, such as late payments and delays in the settlement of interim payment certificates.

- The settlement of contractual claims is reliant upon the impartiality of the decision makers, which is problematic when the client is paying the professional fees for the services of the consultants and decision makers.
- There is information asymmetry in any claim situation where the claimant is likely to have more/better information than the client team making the decision. Information asymmetry is rarely discussed, a better understanding could lead to more equitable decisions.
- The research focused on structuring the framework for a code of best practice that can be adopted to improve the weak areas in the process and mitigate claim settlement.
- The code of best practice encompasses measures to be adopted from project initiation to claim occurrence and settlement.
- The cost of preparing and settlement of a contractual claim for cost reimbursement can be significant for both the contractor and the client who must pay additional fees for consultant's time. No data and information were available on the real cost of claim preparation and settlement.
- Bureaucratic procedures in the KSA can slow the claim settlement process where burdensome bureaucracy impacts decision making and time.
- Insufficient attention is often given to the procurement process
- Saving resources that are consumed in the process it is much needed with respect to KSA vision 2030 plan to help construction sector perform to its capacity.
- The research provides a baseline for further research into the impact of procurement, and design measures to mitigate the impact and incidence of claims in the KSA construction industry and to make the industry more productive and efficient.

The objectives of the research were achieved by answering the research questions through the literature overview, data collection and analysis, which led to the development of the framework and the code of best practice.

The literature review determined the underlying causes of claim occurrences and the process inefficiencies in the settlement of claims. This helped to understand the weaknesses and the areas that needed improvement.

Data were collected and analysed to categorise the causes of claims, their effects, and the as-it-is claim settlement procedure in KSA, and its shortcomings that need improvement. This helped to establish the relationship between the factors, the interdependencies, and the system's complexity.

A framework was developed based on literature and quantitative and qualitative data analysis. Recommendations were ranked, and measures designed to achieve the improvements to populate the structure.

10.3 Research objectives:

To achieve the research aim, the following objectives were established:

Objective 1: To identify the negative effects and impacts of disruptions, delays and claim on construction project progress

Objective 2: To identify the underlying critical causes of disruptions, delays, and claim occurrences dominant in the KSA construction projects

Objective 3: To explore the existing practices prevalent in KSA construction projects from project initiation to claim occurrences and from claim occurrence to claim settlement process.

Objective 4: To investigate factors important in hindering the process and resulting inefficiency in the claim settlement process.

Objective 5: To investigate the drivers, issues, enablers, and disruptors which influence the outcomes of the construction work in KSA construction industry.

Objective 6: To understand the interdependence, complexity and the systematic approach to construction project planning and performance through project life cycle.

Objective 7: To develop a framework for a code of best practice to improve the process from project initiation to claim occurrence (due to dispute or conflicts) and from claim occurrence to claim settlement to mitigate the negative effects.

10.3.1 Objective 1: To identify the negative effects and impacts of claim on construction project progress

The data analysis indicated that the participants agree that claim occurrences negatively affect project progress. Time is the most affected factor with a relative importance index (RII) of 0.82. 30% of respondents strongly agree, while 60% agree that claims affect time on projects in KSA. The cost factor was second with an RII of 0.8 20% of respondents strongly agree, while 70% agree that claims negatively affect the project's cost and result in cost overruns. Quality was ranked in third place with an RII of 0.74. 10% of respondents strongly agree, while 70% agree that claim occurrences affect the quality standards and cause substandard work in KSA.

The KSA construction industry environment has been drastically affected by substantial numbers of claims in construction projects (Assaf et al., 2019).

Claims and disputes in construction projects are associated with delays and confrontational experiences. The breakdown of harmonious relationships has an impact on the people and process, with a lack of trust between the parties in the projects. Any breakdown in working relationships should be rectified by negotiations and may require a change of personnel. Construction projects rely on trust and working as a team. A framework is required to help ensure that a structured system is in place to help in the settlement of any claims and disputes.

10.3.2 Objective 2: To identify the underlying critical causes of claim occurrences dominant in the KSA construction projects

The most critical issues that cause disputes and raise the probability of causing claims were identified as:

1. Financial
2. Contract related
3. Owner related
4. Design process-related
5. Behaviour related
6. Contractor related
7. Project implementation-related
8. External.

Table 10-1 shows the most critical factors under each category. The claim occurrences in KSA are linked to these critical factors of each cause group, see Figure 10-1

Finance related factors: The most important factor highlighted is "the late payment" (80%).

Failure to pay within the stipulated time in the contract and to honour the payment certificates is defined as late payment (Harris and McCaffer, 2003). Many parties are involved in payment including client, contractor, superintending officer, architect, quantity surveyor and banker. The problem will lead to serious cash flow problems down the chain of contracts (Construction Industry Working Group on Payment, 2007).

The reasons of financial related project delays are categorised into four groups; 1) late payment, 2) poor cash flow management, 3) insufficient financial resources, 4) financial market instability. Financial management and cash flow problems in the KSA emanate from poor budgetary control at the outset of the project with the failure to include sufficient contingencies to take account of the complexity of construction projects. Late payments lead to cash flow issues for the principal contractor and all those in the supply chain; late payments can lead to further claims caused by disruption and additional finance charges. The client must honour their contractual obligations on payment; however bureaucracy also has an influence in the KSA by slowing processes.

Categories of cause factors	Most critical factors (frequency percentage)	Most critical factor (RII)
Finance related factors	Late payment(%80) Miscalculation of the budget at the first place (10%) Inadequate financial planning for the project(%10)	Late payment
Contract related factors	Ambiguous/unclear contractual document. (70%) Poor contract management practices(%20) Inadequate use of contract(%10)	Ambiguous/unclear contract documents
Client related factors	Change orders (60%) Unclear ambiguous requirements (30%) No proper documentation of changes demanded (10%)	Change orders
Design related issues	Inadequate Scope of work/specifications (50%) Design errors(%30) Change requirements by owners(%10) Incomplete/Inaccurate Design(%10)	Inadequate Scope of work/specifications
Behaviour related issues	Failures in quick decision making (40%) Intent to resolve conflicts/disputes (40%) Poor communication (20%)	Failures in quick decision making
Contractor related issues	Poor project management practices (70%) Poor contract administration practices (30%)	Poor project management practices
Project implementation related issues	Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.) (70%)	Incomplete or erroneous construction documentation (shop

	Change orders by clients or Variation orders (changes in scope of work requested by contractor) poor contract administration practices (20%) Inappropriate programmes(%10)	drawings, work schedules, material, site assessments etc.)
External issues	Changes in Laws or regulations (government level) (100%)	Changes in Laws or regulations (government level)
Cause categories	Financial issues (80%) Design Process issues (20%)	Financial issues

Table 10-1 Most critical factors in KSA

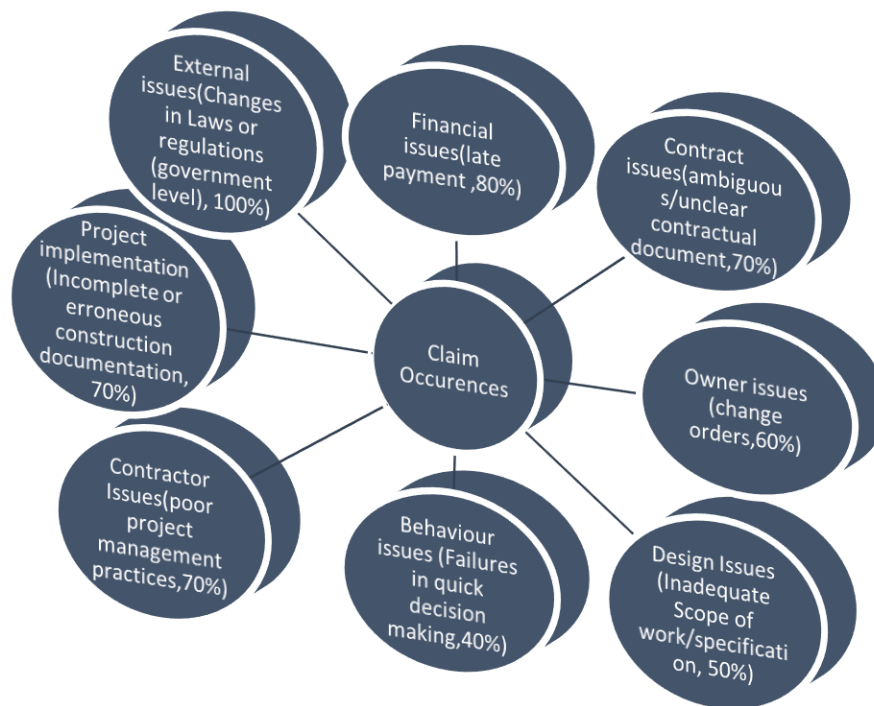


Figure 10-1 Critical factors linked to claim occurrences in KSA

10.3.3 Objective 3: To explore the existing practices prevalent in KSA construction projects from project initiation to claim occurrences and to claim settlement process

Practices through project lifecycle phases

- Most causes of claims fall under phase three of the construction project life cycle, construction phase, with 66% of initiating factors reflecting practices employed in the industry, followed by the pre-construction phase, with 23% of initiating factors.
- 45% of the factors in the construction phase fall in the changes group related to design, scope, requirements, laws etc. in the pre-construction phase of the construction project life cycle. Project management and control aspects were ranked second for affecting the

construction phase and causing claims with 24% of factors reflecting practices at this stage.

- 80% of respondents saw bureaucracy as negatively affecting projects progress in KSA.
- 70% felt that the time needed for approvals is very long, while 30% ranked verbal communications as the most adverse factor.
- Two broad categories that need immediate attention to handle bureaucracy in a more positive way were firstly, reform construction sector: Respondents felt reform was the most-needed improvement in the KSA construction sector. Amongst the suggestions falling under this category 33% pointed at improving the standard contract and 27% saw reform selection criteria as being the most dominant aspect. Secondly, reform processes, with 50% suggesting an alternative system with time frame, 31% chose "change to an electronic system" as the best process.

Practices at design, procurement, and construction/site production stages

An analysis of the design, procurement and construction/site production process practices revealed weaknesses in the claims process.

- Respondents viewed inefficient practices at the design process as the main underlying causes of claim occurrence (see Figure 10-2).
- 33% of issues mentioned by respondents fall under "incomplete/inaccurate design", while 30% of issues reveal "inadequate scope of work/specifications" as the second most problematic practice in design.
- Second, to the design process is the inefficient practices at the procurement system. Under this category 29% of issues mentioned fall under "procurement procedure" inefficiencies, 24% issues falling under "unclear contract" and 12% issues falling under "lowest bid selection".
- Inefficient practices in the site production process was third, with issues in "implementation/production process complexities and inefficiencies" leading with 31% frequency occurrence. 25% of the issues mentioned by respondents were falling under "inexperienced contractors" and "behavioural issues".

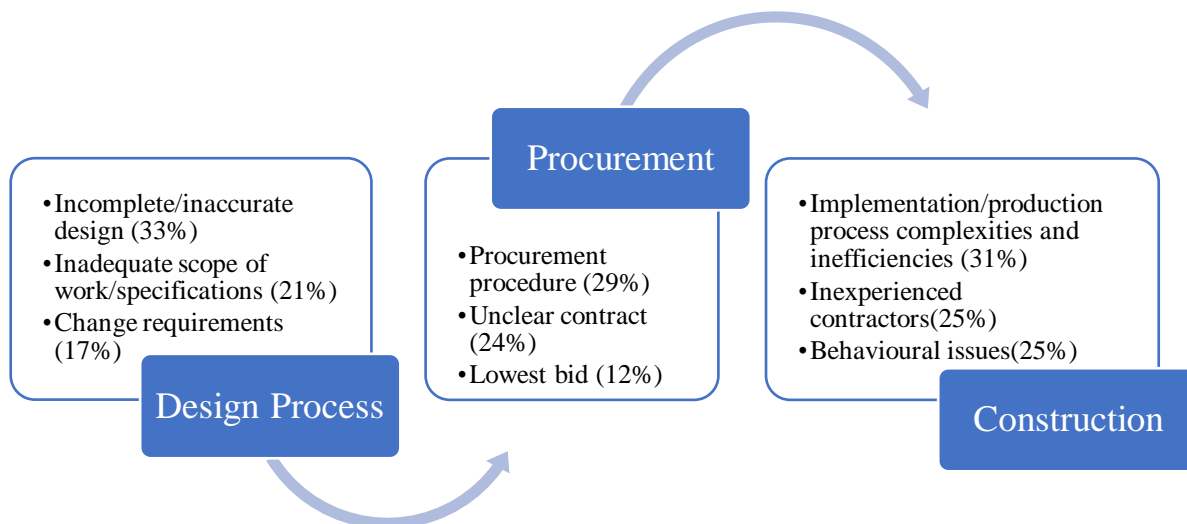


Figure 10-2 Inefficient practices in design, procurement, and construction stages

Practices in the claim settlement procedure

- 95% of respondents viewed the claim settlement process is not sequential and needs to be standardised.
- The process employed for contractual claims settlement in the KSA has been ineffective. The analysis highlighted the non-sequential and unsystematic process being the most critical aspect (40%) followed by "unclear contractual entitlements" (30%).

The claim is a management issue requiring efficient and effective management skills, unfortunately, effective claims management is still unachievable in the construction industry. Poorly managed practices create blatant issues obstructing the resolution process (Hai, 2019).

Claim settlement procedure improvements

Opinions to improve the issues in the present employed system included.

- The first option to make the claim settlement process robust is to introduce a "time frame", 30% responses. Second, with frequency of 20% responses is the "negotiation".

To structure better ways to resolve claims, the analysis revealed: (see Figure 10-3)

- Develop efficient and robust claim management process: 23% of the practices mentioned by respondents that need to be amended and improved belong to this category. 30% highlighted "effective claim management" and "engage claim experts and claim consultants" as the highest-ranked factors. 20% highlighted "clear and

specific contract drafting" practices.

- Focus on ADR methods: 47% focused on practices related to alternative methods to resolve claims. 30% of responses highlighted the need for processes to be "Time framed". 20% emphasised "negotiation" as an alternative approach towards resolving conflicts and claims.
- Judicial training: 16% highlighted judicial training practices. 43% of suggestions emphasised constituting of "Specialist committee for claim resolution" while 29% highlighted "training law firms about construction industry conflicts."
- Claim submission and evaluation: 14% deemed improvements in practices belonging to claim submission and evaluation. 33% highlighted "brief claim documentation" and "fair evaluation of claims" as the most important practices to look for improvements. 17% highlighted "standardise and sequential processes".

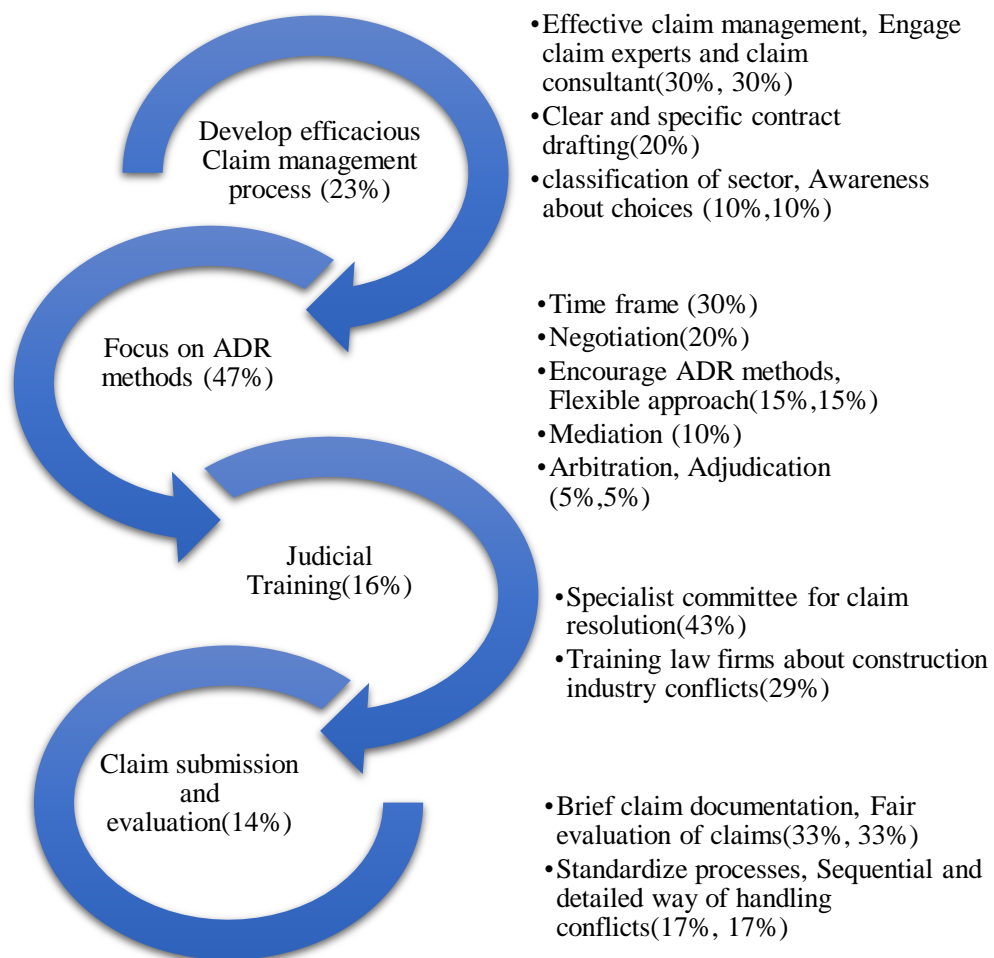


Figure 10-3 Major area of improvement and its factors in claim settlement in KSA

The main categories to improve the claim settlement process are:

- Amend the claim settlement process: 53% fall under this category. "Mediation" is the top response (44%) and "modify the contract and add clauses for ADR" (25%).
- Introduce regulatory procedures through "Dispute resolution boards" is the top suggested response (50%). "Regularise contractual claim process"(25%) and "Compulsory professional certification and licenses to work" 25%.
- Reform legal system to support claim settlement: 20% suggest improvement under this category. "Train judiciary on the construction industry and its conflicts" (67%), "Support court system with ADR" (33%).

10.3.4 Objective 4: To investigate factors important in hindering the process and resulting inefficiency in the claim settlement process

Analysis revealed the causes of conflicts and claims in KSA and the barriers to dealing with the claim settlement process.

- Top three fundamental problems with claim resolutions in KSA include the "Attitude of people (80%)", "Lack of disciplined approach (23%)"and "Mechanism of settlement" (18%).
- The critical factors for dispute resolutions in KSA keeping in view the alternative ways include "Awareness about ADR", "Intent" and "Specialisation and Expertise" and "Promptness".
- The top-ranked barriers for using alternative ways to resolve disputes and claims in KSA includes "Lack of awareness about ADRs" (50%), "Attitude" (50%) and "KSA Procurement law"(30%).
- Alternative ways and methods to resolve dispute and claims includes "Mediation" (35%), "Modify contract and add clauses for ADR" (20%), "Train judiciary on the construction industry and its conflicts" (20%), and "Dispute resolution boards" (20%).

Categorisation of causes of conflicts and claims

The causes and issues are categorised to design the structure that reflects the code of best practice to improve claim settlement. The causes fall into the following groups:

1. Design related causes
2. Construction process-related causes
3. Project/Site management related issues

4. Contract administration related issues
5. Uncontrollable events issues
6. Bureaucracy and governance-related issues
7. Claim settlement issues.

The three major categories that reflect the core problem areas that generate cause factors are pre-construction issues, construction issues and claim settlement issues.

Improvements to causes

To design the framework, the identified categories of needed improvements are:

1. Pre-construction Process Improvements
2. Operational level improvements
3. Claim management improvements
4. Industry-level improvements.

1. Pre-construction process improvements

- Design Process
- Tendering & contract awarding
- Contract drafting.

2. Operational level improvements (Construction Process)

- Project Management and Control
- Supply chain Management.

3. Claim management improvements

- Claim settlement methodology improvement
- Standardisation of practices
- Robustness and readiness of legal infrastructure.

4. Industry-level improvements

- Standardised performance benchmarks and classification of sector
- Information management (communication and collaboration)
- Modern IT tools and applications
- Competency building
- Robust legal infrastructure.

10.3.5 Objective 5: To investigate the drivers, issues, enablers and disruptors which influence the outcomes of the construction work in KSA construction industry.

The cause-and-effect cycle and the interrelationship between these elements generate the complexity and dynamism to the system. This complexity and chaotic behaviour of the components of the project are the base for understanding the drivers, issues, enablers, and disruptors in the system.

These elements of the claim management system that face complex interdependent relations either enables or disrupts the system outcome. The important sub systems/processes that interact with one another and loop through structural coupling include: 1) Project, 2) Procurement system, 3) Contract drafting, 4) Claims management, 5) Construction industry.

Table 10-2 shows the elements, its role, drivers, its enablers, disruptors, and its issues in a summarised form.

Construction industry: The external environment that effects policy, laws, regulations, and economic parameters effecting project progress	
Drivers	Enablers
Financial Drivers	Modern Technological tools (IT)
Government Policy	Government Laws and Regulations
Economic outgrowth	Government funding
Needs (requirements)	Economic stability
Technological capabilities	
Disruptors	Issues
Negative aspects of Bureaucracy role (time consumed)	Non-performance of sector
Technological ignorance	Declined quality
Rigid and limited options in law	Financial and time overruns
Political issues	Unprofessional behaviour
Unprofessionalism	
Non-standardisation in construction sector	Failure to meet international modern technological requirements and needs
Un-Systemised and non-standardised work processes	Delays in achieving milestones due to laws and procedures
Project: The endeavour taken with resources in hand within external context of industry	
Drivers	Enablers
Financial outcomes(advantages)	Resources (Financial, time, human)
Government regulations	Procedural structures
Client Requirements	Systemised and standardised processes
Enhancement in technological capability and improvements	Modern technological tools (IT)
Quality of life improvements and upgradations	Government laws
Construction industry (Needs, environment, laws, economic situation)	Communication and collaboration tools
Socio-Economic needs	
Disruptors	Issues
Incompetent work force	Declined quality
Unprofessionalism	Financial and time overruns
Inadequate design process	Design issue (incomplete, inaccurate)

Changes in requirements	Delays in project progression causing disputes and claims
Rigid and limited options in law	Unprofessional behaviour, poor PM, and CA practices and low-quality skill resulting in disputes
Changes in scope	Lack of awareness and training regarding modern IT tools and their use.
Incomplete pre-construction work (survey, feasibility, design, time frame, schedules)	Failure to meet international modern technological requirements and needs
Inadequate communication and collaboration mechanism	Longer time taken for approvals and processes
Standard form of contract	Ambiguous Dispute resolution process
Un-Systemised and non-standardised work processes	Uncertainty (weather conditions, risks associated to uncontrollable factors)
Technological ignorance	
Negative aspects of Bureaucracy role (time consumed)	
Weather	
Procurement system: The subsystem of the awarding contract of the project. Involves preconstruction process, bidding, tendering and evaluation details	
Drivers	Enablers
Best economic selection	Efficient Tendering system
Financial benefit	Efficient Bidding
Quality benchmarks	Project Delivery system
Expertise	Government laws
Procurement policy	
Government regulation	
Disruptors	Issues
Non-standardisation in construction sector	Declined quality
Incomplete bidding document	Selection biases (Lowest bid, nontechnical selection)
Incomplete Preconstruction work (survey, feasibility, design, time frame, schedules)	Failure to meet international modern technological requirements and needs
Rigid and limited options in law	Unprofessional behaviour
Standard form of contract	
Loopholes in Contract awarding (selection criteria)	
Standard form of contract	
Contract drafting: The subsystem of drafting contract clauses, involving construction drawings, specifications, procurement and contracting requirements, Addenda, and contract modifications	
Drivers	Enablers
Communication between parties	Communication and collaboration tools
Settle Project details	Government laws
Clarity of responsibilities and liabilities	
Disruptors	Issues
Unclear clauses	Lack of focus on written documentation
Ambiguity about Contract entitlements	Ambiguous Dispute resolution process
Ambiguity about Dispute resolution	Unprofessional attitude towards project progress
Standard form of contract	Failure to meet international modern technological requirements and needs
Unprofessionalism	Unprofessional behaviour
Lack of awareness regarding alternative way to resolve	
Inadequate communication and collaboration mechanism	
Claim management: The subsystem dealing with methodology of resolving conflicts and claims within project resources, contract details and industry standards.	
Drivers	Enablers
Transparency	Technological support

Time Efficiency	Legal support
Cost Efficiency	Behaviour towards resolution
Trust on the system	Government laws
	Proper Claim management system
	Clear Contract
Disruptors	Issues
Power dynamics	Claim resolution delays
Procedural loopholes	Lack of legal infrastructure.
Attitudinal issues	Lack of standardised Claim management
Legal Structure issues	Unprofessional behaviour
Standard form of contract	Behavioural barriers towards alternative resolution ways
Lack of awareness regarding conflict management and ADR	Lack of usage of modern IT tools (to support proof and claim submission)
Non standardised process for claim submission and evaluation	No standards for claim presentation, submission, evaluation, and compensation
Ambiguity about Contract entitlements	

Table 10-2 Summary of sub systems and its related drivers, enablers, disruptors, and issues

10.3.6 Objective 6: To understand the interdependence, complexity and the systematic approach to construction project planning and performance through project life cycle.

The objective was achieved by aligning the identified elements and their interrelationship with one another and with the whole system through analysis of primary and secondary data.

Claim management process

The processes, the actors and the issues were identified. Figure 10-4 shows the claim management process and its related processes and actors.

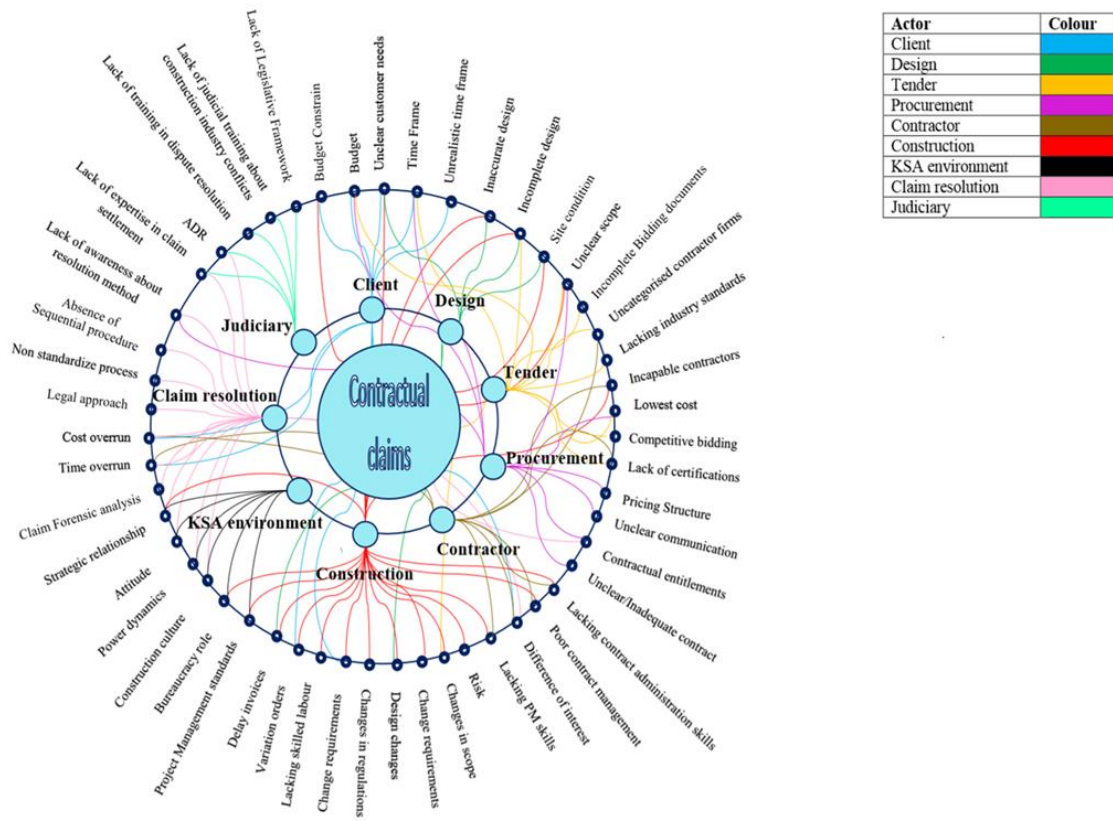


Figure 10-4 Claim management in terms of sub systems, actors, and issues

The claim management system was segmented into its constituting processes and issues (Table 10-3).

Subsystems	Processes and actors
Project	Design process Client Contractor Tender Contract awarding Implementation

Construction Industry	Laws and Regulation Approvals and Permits (Bureaucracy) Legal Infrastructure Technological usage Human resources (Quality and Skills) Raw material and Equipment availability
Procurement system (Pre-construction Phase)	Pretender Tender Contract Awarding
Contract Drafting	Client Contractor Standard form of contract
Claim management	Standard form of contract Legal infrastructure Conflicting parties Technological usage

Table 10-3 Subsystems of claim management and their related processes and actors

The processes and issues of each system are identified. These systems are interlinked and add complexity to the over claim management process (Figure 10-5).

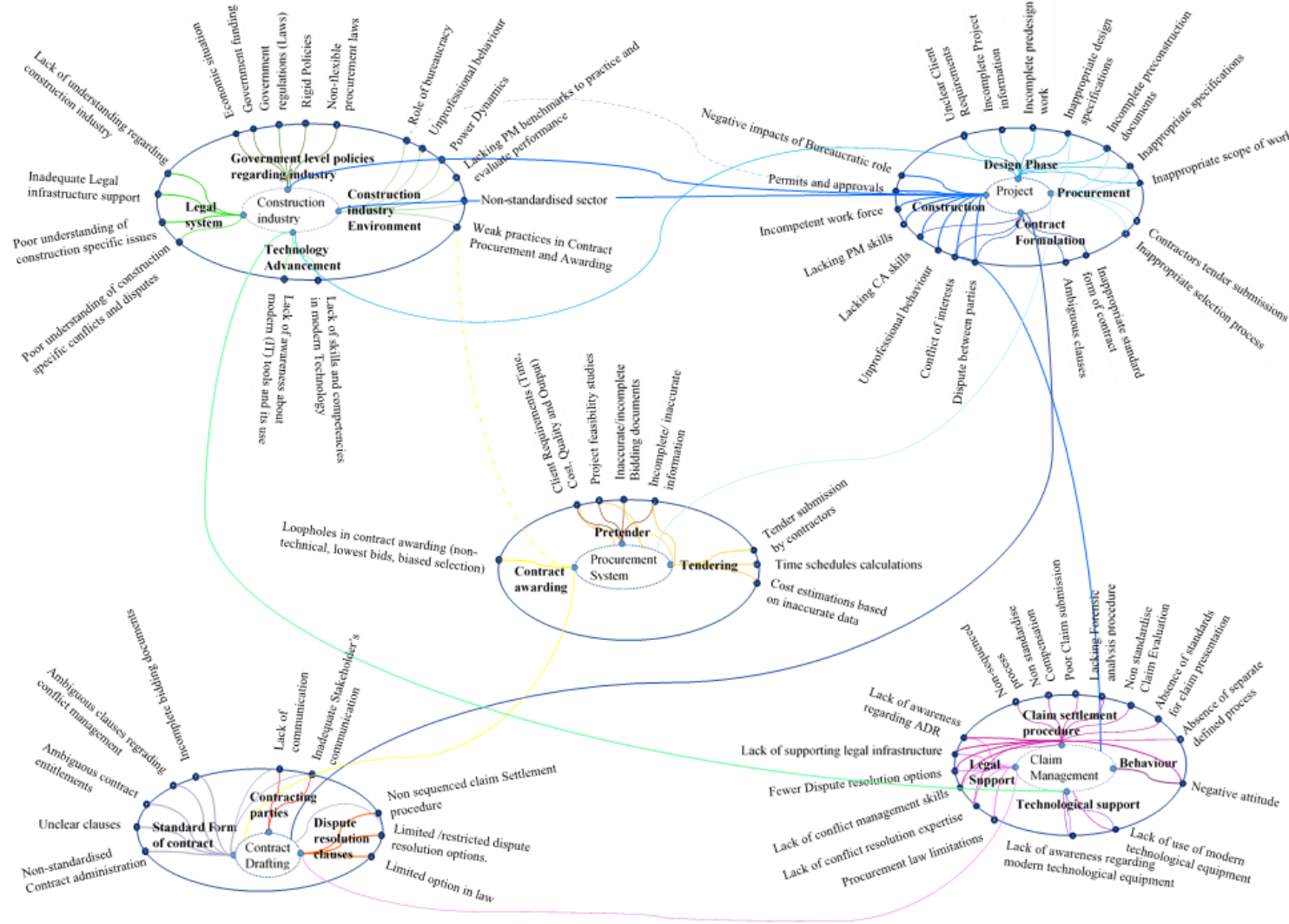


Figure 10-5 The interlinked subsystems, its processes, and related issues.

10.3.7 Objective 7: To develop framework for a code of best practice to improve the process from project initiation to claim occurrence (due to dispute or conflicts) and from claim occurrence to claim settlement to mitigate the negative effects

The recommendations and measures are codified into two categories, preventive strategy, and corrective strategy. Figure 10-6 shows the framework to mitigate claim settlement in terms of code of best practices.

Category of issues and causes of claims.	Issues and Causes	Category of Needed Improvements Areas	Needed improvements subcategory	Recommendations and measures
Preconstruction Issues	Design related causes.	Pre-construction Process Improvements	Design Process	<ol style="list-style-type: none"> 1. Specifications 2. Change Orders (communication and documentation) 3. Design tools 4. Work breakdown structures (workflow tools and business process management tools. Visual dashboards like colour codes to display action items and responsibility)
			Tendering & contract awarding	<ol style="list-style-type: none"> 1. Contract Awarding
			Contract drafting	<ol style="list-style-type: none"> 1. Revisit Standard form of contract
Construction Issues	Construction process-related causes.	Operational level improvements (PM & Control)	Project Management and Control	<ol style="list-style-type: none"> 1. Project Management and Control Improvements
	Project/Site management related issues.		Supply chain Management	<ol style="list-style-type: none"> 1. Supply chain Management
	Contract administration related issues.			
	Uncontrollable events issues.			
	Bureaucracy and governance related issues.	Industry-level improvements	Standardised Performance benchmarks & classification of sector	<ol style="list-style-type: none"> 1. Performance measurement system: 2. Grading of contractors: 3. Standardise construction sector (Certifications and grading):
			Information Management (communication & collaboration)	<ol style="list-style-type: none"> 1. Centralised information management system: 2. Control, monitoring & centralised information management system:
			Modern IT tools and applications	<ol style="list-style-type: none"> 1. Communication and collaboration tools (Modern IT tools and applications):
Competency Building			<ol style="list-style-type: none"> 1. Training 2. Behavioural approaches 3. Conflict management 4. Skill and capacity building 	
Robust Legal infrastructure			<ol style="list-style-type: none"> 1. Dispute resolution boards: 2. Alternative legal framework support: 3. Judicial training 	
Claim settlement Issues	Claim settlement issues	Claim management improvements	Claim settlement methodology improvement	<ol style="list-style-type: none"> 1. Sequential steps to undertake for dispute resolution 2. Dispute resolution methods:
			Standardization of Practices	<ol style="list-style-type: none"> 1. Claim presentation
			Robustness and readiness of Legal infrastructure	<ol style="list-style-type: none"> 1. Dispute resolution boards: 2. Alternative legal framework support: 3. Judicial training

Figure 10-6 Framework of the code of best practice to mitigate claim settlement in KSA

10.4 Summary of research Objectives:

Table 10-4 shows the summary of research objectives and how they were met.

Objectives	How objectives were met
To identify the negative effects and impacts of disruptions, delays and claim on construction project progress	Data Analysis showing time as the most affected factor with RII of 0.82. (Quantitative data)
To identify the underlying critical causes of disruptions, delays, and claim occurrences dominant in the KSA construction projects	<p>Under 8 identified categories of causes most critical factors were identified through quantitative data analysis. <i>Financial issues</i> were ranked most critical. While under each group the identified critical causes included</p> <ol style="list-style-type: none"> 1. Finance related factors : Late Payment 2. Contract related : Ambiguous/unclear contract documents 3. Owner related : Change orders 4. Design process-related : Inadequate Scope of work/specifications 5. Behaviour related : Failures in quick decision making 6. Contractor related : Poor project management practices 7. Project implementation-related: Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.) 8. External : Changes in Laws or regulations (government level)
To explore the existing practices prevalent in KSA construction projects from project initiation to claim occurrences and from claim occurrence to claim settlement process.	<p>Qualitative Data Analysis of interviews were performed.</p> <p>Under Practices through project lifecycle phases Most causes fall under Construction phase with 66% of initiating factors. Whereas within construction phase 45% of the factors are change related.</p> <p>Under Practices at design, procurement, and construction/site production stages Design process was most inefficient as per respondents view</p> <p>Under Practices in the claim settlement procedure Claim settlement process is not sequential and needs to be standardised. (95% of respondents). Non-sequential and unsystematic process being the most critical aspect (40%)</p>
To investigate factors important in hindering the process and resulting	<p>Qualitative Data Analysis of interviews showed top three fundamental problems with claim resolutions in KSA including</p> <ol style="list-style-type: none"> 1. Attitude of people.

inefficiency in the claim settlement process.	<ol style="list-style-type: none"> 2. Lack of disciplined approach. 3. Mechanism of settlement.
To investigate the drivers, issues, enablers, and disruptors which influence the outcomes of the construction work in KSA construction industry.	<p>The qualitative and quantitative analysis revealed the important sub systems/processes that interact with one another and loop through structural coupling includes</p> <ol style="list-style-type: none"> 1. Project 2. Procurement system 3. Contract drafting 4. Claims management 5. Construction industry. <p>The drivers, Enablers, disruptors and issues under each were identified</p>
To understand the interdependence, complexity and the systematic approach to construction project planning and performance through project life cycle.	<p>System diagram was made to show the interdependence and complexity within claim management process with actors identified in first layer and issues in second layer within the subsystems/processes identified in previous objective</p>
To develop a framework for a code of best practice to improve the process from project initiation to claim occurrence (due to dispute or conflicts) and from claim occurrence to claim settlement to mitigate the negative effects.	<p>Seven major cause groups were identified</p> <ol style="list-style-type: none"> 1. Design related causes 2. Construction process-related causes 3. Project/Site management related issues 4. Contract administration related issues 5. Uncontrollable events issues 6. Bureaucracy and governance-related issues 7. Claim settlement issues. <p>Four major categories were identified for needed improvements</p> <ol style="list-style-type: none"> 1. Pre-construction Process Improvements 2. Operational level improvements 3. Claim management improvements 4. Industry-level improvements. <p>Cause categories were aligned with needed improvement categories.</p> <p>Under each category for needing improvement major processes were identified that needed recommendations and measures to improve</p> <ol style="list-style-type: none"> 1. Pre-construction process improvements <ul style="list-style-type: none"> • Design Process • Tendering & contract awarding • Contract drafting. 2. Operational level improvements (Construction Process) <ul style="list-style-type: none"> • Project Management and Control • Supply chain Management. 3. Claim management improvements <ul style="list-style-type: none"> • Claim settlement methodology improvement • Standardisation of practices

	<ul style="list-style-type: none"> • Robustness and readiness of legal infrastructure. <p>4. Industry-level improvements</p> <ul style="list-style-type: none"> • Standardised performance benchmarks and classification of sector • Information management (communication and collaboration) • Modern IT tools and applications • Competency building • Robust legal infrastructure. <p>Recommendations were identified through quantitative analysis. Measures were identified against each recommended category through analysis (Primary and secondary) and prescribed as Preventive and corrective strategies.</p>
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Table 10-4summary of objectives and how they were met

10.5 Original Contribution to Knowledge

The research contribution to knowledge on five dimensions:

First, it explores the underlying causes of claim disputes through qualitative and quantitative data obtained through semi structured interviews and survey questionnaire.

Second, it explores the practices employed from project initiation to claim occurrences and from claim occurrences to claim resolution through interviews that highlighted areas of improvement. This is first of a kind of study where practices were discussed that are exercised within KSA context throughout the process.

Third, it ranked areas of needed improvement and rates the suggested recommendations to achieve those improvements through quantitative analysis. It also used qualitative data in form of interviews to understand and categories causes and issues of claim resolutions

Fourth, it helps in building and understanding the complexity through cause-and-effect relationships and interdependence within the system. This was a major contribution to align best practices to achieve needed improvements as research objective.

Fifth, as a major contribution it proposes a framework of best practices to mitigate claim settlements in KSA. The measures were designed using primary (qualitative and quantitative) and secondary (literature and other documentation) data as preventive and corrective strategies.

Finally, it recommends avenues for further investigation and research for exploring areas of improvement and for academic and industrial applications of this work in the KSA.

10.6 Limitations of the research:

The published literature on claim settlement and methodology is lacking especially for projects in the KSA. The public sector does not want to expose any shortcomings in the processes and procedures for procurement, contract management and settlement. The companies are reluctant to discuss shortcomings in the system for fear that it may jeopardise the opportunity to win further work on KSA projects. The research focused on categories of causes, which created difficulties in gathering data to use for the research.

The number of companies and individuals involved in the research is limited ,caused primarily by the Covid-19 situation ,despite assurances ,respondents failed to deliver on their promises to participate in the research.

The topic is sensitive because of the nature of claims and claims settlement. The clients, consultants and contractors do not want to discuss claims in public because they feel it is a topic that is commercially sensitive.

10.7 Validation Phase

An important step will be to validate the findings especially the framework that is developed. There are recommendations and measures that were presented against each recommended category. To validate either use focus group to discuss them as appropriate to be implemented in KSA and notice pattern of responses from experts regarding findings or perform survey questionnaire to identify experts opinions regarding the framework, recommended improvement categories, recommendations and measures under each.

10.8 Recommendations for future research

The research is the first attempt to design and develop a code of best practice to mitigate conflicts and claim settlement, the need is to discuss the strategies and measures at a broader level engaging the representatives from the construction industry federations, the design team professions, and the public clients. The recommendations and measures need to be evaluated by KSA experts to ascertain their viability and usage.

The next step is to build empirically upon these areas specifically and focus on the measures and strategies to minimise negative effects in each respective area.

A focus group on the strategies and measures will help in developing more robust, focused and effective resolution methods.

Research is needed to develop a causal relationship between the causes of disputes that are converted to claims and conflicts with respect to KSA.

10.9 Summary:

The objectives of the research were achieved by answering the research questions. Literature overview, data collection and analysis, led to the development of the framework and the code of best practice.

The literature review determined the underlying causes of claim occurrences. Data were collected and analysed to categorise the causes of claims, their effects, and the as-it-is claim settlement procedure in KSA that defined the relationship between the factors, the interdependencies, and the system's complexity. It reflected the shortcomings that need improvement. The drivers, enablers, disruptors and issues were also discussed to further understand the process. A framework was developed based on literature and quantitative and qualitative data analysis. Recommendations were ranked, and measures designed to achieve the improvements to populate the structure.

The research was limited in context of public sector projects and the number of respondent's included. It is the first step to present a picture of system from initiation of process to its needed improvements and measures to consider. The next step will be to specifically study each recommendation category and build measures to validate with practitioners through focus groups or interviews. It will also be useful to develop casual relationship between cause so disputes that are converted to claims and conflicts in KSA to further elaborate specific measures.

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Appendix 1:



SURVEY QUESTIONNAIRE WORKSHEET

Research project title: A systematic Approach for Construction Contract Claims Settlement in the Kingdom of Saudi Arabia

Bio

Name	
Company	
Professional discipline	
Professional certifications or licenses	
Job role	

The impact of contractual claims for cost and time reimbursement on the construction project

Do you believe that contractual claims for extensions of time and reimbursement of cost are endemic in KSA construction projects? If yes, please state your reasons?

(The answer)

Is size and type of project an important factor in claims occurring on projects?

(the answer)

Do you think the current system of contractual claims settlement works effectively and is fair to both the employer and the contractors? If no, please state your reasoning.

(the answer)

Is KSA public sector bureaucracy causing a difficulty, with too much emphasis on compliance, process, procedure, and insufficient emphasis on collaboration? If so, what would you change and how would you change it?

(the answer)

Do you think a more standardised system of claims settlement would help the process, where it is clear what documents must be provided, which may be written documents, visual information, digital information, graphical information?

(the answer)

Causes of Claims in KSA Construction Projects

In your experience, what are the main underlying causes of contractual claims in Saudi construction projects? Can you explain why so many claims are occurring, is it the fault of the procurement system, the design process, or the site production process?

(the answer)

What are the fundamental issues in procuring KSA construction projects? Is it lowest cost, best value, or most economically advantageous tender?

(the answer)

Do you think too much risk is passed to the site construction team, or is it the KSA operating environment that causes the difficulty?

(the answer)

Are there particular types of projects that are more prone to contractual claims?

(the answer)

Do you believe that the traditional standard forms of contract used in the KSA are fit for purpose in the modern KSA construction industry?

(the answer)

Method of Claims resolution in Saudi Construction Projects

What is the preferred method of claims resolution in a KSA construction project once negotiations to reach a settlement have failed?

(the answer)

Based on your experience, do you believe there is a better way to resolve contractual claims in KSA construction projects?

(the answer)

Is the fundamental problem of claims resolution the attitude of the people, the process, the mechanisms for settlement, the failure to use modern information technology, or the lack of a disciplined approach to contractual claims settlement, recognising that the claim is for compensation of additional cost incurred and granting an extension of time?

(the answer)

Are claims consultants valuable, or do they add another layer of complexity to an already complex process?

(the answer)

Alternative Dispute resolution in KSA Construction Projects

What are the Critical Factors for ADR in KSA Construction project?

(the answer)

What are the barriers to using ADR resolution in KSA projects?

(the answer)

What is the ADR that can be used in KSA construction project in future?

(the answer)

Appendix 2:

Survey Questionnaire

Most of all I would like to appreciate your participation in this questionnaire survey.

The questionnaire is part of PhD thesis. The area of interest is to build a code of best practices to resolve constructional claims in KSA in most efficient ways”. It will be very considerate of you to please spare some time out of your busy schedule and answer all questions.

The questionnaire consist of some sections. First sections collects data regarding your professional experience. Second section collects data regarding claims occurrences and causes in KSA. Third sections collects data regarding claim settlement procedure adopted in KSA. Fourth sections tries to link data to “improvement measures” for claim settlement that could be considered in KSA.

Mostly the questionnaire asks about ranking the options on scale of five. You are requested to please select one option that you think align closest to your experience and opinion. Some questions are about ranking the options in terms of their importance from most important to least important. Kindly arrange the options as per your knowledge (you can use options itself as well as the heading codes that are not case sensitive, see example below)

Example :	
Q-1. Please rank the following financial reasons in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)	
a. Late payment	1. Increased price of the materials
b. Adequate financial planning for the project.	2. a.
c. Increased price of the materials	3. B.

Some questions might have some sub parts. You are requested to please rank the factors as per the gauging parameters being asked for that includes importance, priority, implementation level, implementation ease etc. (see example below)

Example:									
i. Introduce interim committees assigned to a specific project. The committee’s responsibility of keeping transparent way of handling project as well as put time limits for every task and its approval.									
I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can’t decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
<ul style="list-style-type: none"> i. Means name of the subpart factor or option that needs to be gauged (weighted). I. Request to choose the number according to your experience and opinion that how much the specified option should be implemented in KSA with respect to claim management. 									

- **II. Request to choose the number according to your experience and opinion that how easily the option could be implemented in KSA with reference to claim management.**

Section one: General information regarding respondents.

Name: _____

Company/Organization: _____

Q-1. What is your present designation, department and responsibility within your company/organisation? And how long have you been working at this position?

Designation: _____

Department: _____

Responsibility or role: _____

Years of working at _____
current post

Q-2. Do you belong to KSA? If not then please specify the area

Yes 1

No 2

Other _____

Q-3 Do you primarily work in KSA? If not then please specify the area

Yes 1

No 2

Other _____

Q-4 How long have you been working in the construction industry?

Under 5 year	1	<input type="checkbox"/>
5 to 10 year	2	<input type="checkbox"/>
11 to 15 year	3	<input type="checkbox"/>

16 to 20 year	4	<input type="checkbox"/>
21 to 30 year	5	<input type="checkbox"/>
Over 30 year	6	<input type="checkbox"/>

Q-5. How would you classify yourself in the Saudi Council of Engineers?

Engineer	1	<input type="checkbox"/>
Partner	2	<input type="checkbox"/>
Certified professional	3	<input type="checkbox"/>
Consultant	4	<input type="checkbox"/>
Contractor	5	<input type="checkbox"/>

Q. In which sector have you been more actively engaged?

Public Sector	1	<input type="checkbox"/>
Private sector	2	<input type="checkbox"/>
Public private Partnership	3	<input type="checkbox"/>
Both	4	<input type="checkbox"/>
Other(Please specify)	5	<input type="checkbox"/>

Q. What is your expertise?

Architect	1	<input type="checkbox"/>
Design Manager	2	<input type="checkbox"/>
Civil Engineer	3	<input type="checkbox"/>
Mechanical Engineer	4	<input type="checkbox"/>
Electrical Engineer	5	<input type="checkbox"/>
Other (Please specify)	6	<input type="checkbox"/>

Q. What is the main role (background) you have played in majority of your projects? (Please select as per)

Project Manager	1	<input type="checkbox"/>
Design Manager	2	<input type="checkbox"/>
Site Manager	3	<input type="checkbox"/>
Project engineer	4	<input type="checkbox"/>
Construction Manger	5	<input type="checkbox"/>
Construction Engineer	6	<input type="checkbox"/>
Consultant	7	<input type="checkbox"/>
Architect	8	<input type="checkbox"/>
Developer	9	<input type="checkbox"/>
General contractor (GC)	10	<input type="checkbox"/>
Other (Please specify)	11	<input type="checkbox"/>

Section Two: Claims in Saudi construction projects

Q-1. To what extent do you agree that constructional claims in KSA cause a serious difficulty to the project?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Effect of claims in Saudi construction projects, on Time, Cost and Quality:

Q-2. To what extent do you agree that claims in Saudi construction projects have negative effects on the following factors?

I. Claims effects negatively on time of completion of project				
Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Claims effects negatively on cost/budget of completion of project				
Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Claims effects negatively on cost/budget of completion of project				
Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

The reasons for claims in construction projects in KSA:

Q-3. What is the most important financial factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Late payment	1 <input type="checkbox"/>
Inadequate financial planning for the project.	2 <input type="checkbox"/>
Increased price of the materials	3 <input type="checkbox"/>
Delay in approval of Payment certifications	4 <input type="checkbox"/>

Delay invoices	5	<input type="checkbox"/>
Miscalculation of the budget at the first place	6	<input type="checkbox"/>

Q-4. Please rank the following financial reasons in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

Late payment	1.
Inadequate financial planning for the project.	2.
Increased price of the materials	3.
Delay in approval of Payment certifications	4.
Delay invoices	5.
Miscalculation of the budget at the first place	6.

Q-5. What is the most important contract related factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Ambiguous/unclear contractual document	1	<input type="checkbox"/>
Poor contract management practices	2	<input type="checkbox"/>
Inadequate use of contract.	3	<input type="checkbox"/>
Standard form of contract used is not appropriate for modern industrial needs.	4	<input type="checkbox"/>

Q-6. Please rank the following contract related factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

Ambiguous/unclear contractual document	1.
Poor contract management practices	2.
Inadequate use of contract.	3.
Standard form of contract used is not appropriate for modern industrial needs.	4.

Q-7. What is the most important client related factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Unclear ambiguous requirements	1	<input type="checkbox"/>
No proper documentation of changes demanded	2	<input type="checkbox"/>

Communication issues between contractor and client	3	<input type="checkbox"/>
Non-involvement of client at design stage	4	<input type="checkbox"/>
Change orders	5	<input type="checkbox"/>
Contract entitlement issues	6	<input type="checkbox"/>
Conflict of interest and behavioural barriers between contractor and client.	7	<input type="checkbox"/>

Q-8. Please rank the following client related factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

a. Unclear ambiguous requirements	1.
b. No proper documentation of changes demanded	2.
c. Communication issues between contractor and client	3.
d. Non-involvement of client at design stage	4.
e. Change orders	5.
f. Contract entitlement issues	6.
g. Conflict of interest and behavioural barriers between contractor and client.	7.

Q-9. What is the most important design related factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Incomplete/Inaccurate Design	1	<input type="checkbox"/>
Inadequate Scope of work/specifications	2	<input type="checkbox"/>
Change requirements by owners	3	<input type="checkbox"/>
Incomplete Assessments	4	<input type="checkbox"/>
Design errors	5	<input type="checkbox"/>
Unrealistic Time frame	6	<input type="checkbox"/>

Q-10. Please rank the following design related factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

a. Incomplete/Inaccurate Design	1.
b. Inadequate Scope of work/specifications	2.

c. Change requirements by owners	3.
d. Incomplete Assessments	4.
e. Design errors	5.
f. Unrealistic Time frame	6.

Q-11. What is the most important behaviour related factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Lack of professional behaviour	1	<input type="checkbox"/>
Poor communication	2	<input type="checkbox"/>
Lack of motivation.	3	<input type="checkbox"/>
Failures in quick decision making.	4	<input type="checkbox"/>
Intent to resolve conflicts/disputes.	5	<input type="checkbox"/>
Lack of team work and collaboration	6	<input type="checkbox"/>
Fear of loss or getting disadvantage	6	<input type="checkbox"/>

Q-12. Please rank the following behaviour related factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

a. Lack of professional behaviour	1.
b. Poor communication	2.
c. Lack of motivation.	3.
d. Failures in quick decision making.	4.
e. Intent to resolve conflicts/disputes.	5.
f. Lack of team work and collaboration	6.
g. Fear of loss or getting disadvantage	7.

Q-13. What is the most important contractor related factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Poor Project management practices	1	<input type="checkbox"/>
Poor monitoring and control as well as quality control practices.	2	<input type="checkbox"/>

Poor Contract administration practices	3	<input type="checkbox"/>
Lack of expertise	4	<input type="checkbox"/>
Poor planning that effects the implementation phase in negative way	5	<input type="checkbox"/>
Conflict of interest with other stakeholders	6	<input type="checkbox"/>

Q-14. Please rank the following contractor related factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

a. Poor Project management practices	1.
b. Poor monitoring and control as well as quality control practices.	2.
c. Poor Contract administration practices	3.
d. Lack of expertise	4.
e. Poor planning that effects the implementation phase in negative way	5.
f. Conflict of interest with other stakeholders	6.

Q-15. What is the most important Project implementation related factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)	1	<input type="checkbox"/>
Inappropriate programmes.	2	<input type="checkbox"/>
External factors (weather conditions, strikes, material scarcity, uncontrollable factors)	3	<input type="checkbox"/>
Change orders by clients or Variation orders (changes in scope of work requested by contractor)	4	<input type="checkbox"/>
Scarcity in skilled labour force	5	<input type="checkbox"/>
Poor project planning	6	<input type="checkbox"/>
Incompetency in project management	7	<input type="checkbox"/>

Q-16. Please rank the following project implementation related factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

a. Incomplete or erroneous construction documentation (shop drawings, work schedules, material, site assessments etc.)	1.
b. External factors (weather conditions, strikes,	2.

material scarcity, uncontrollable factors)	
c. Change orders by clients/ Variation orders (changes in scope of work requested by contractor)	3.
d. Scarcity in skilled labour force	4.
e. Poor project planning	5.
f. Incompetency in project management	6.
g. Inappropriate programmes.	7.

Q-17. What is the most important external factor that play a critical role in causing a dispute that later aggravate to a claim? (Please select one)

Unexpected weather conditions	1	<input type="checkbox"/>
Strikes	2	<input type="checkbox"/>
Changes in Laws or regulations (government level)	3	<input type="checkbox"/>
Natural disaster	4	<input type="checkbox"/>

Q-18. Please rank the following external factors in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important)

a. Unexpected weather conditions	1.
b. Strikes	2.
c. Changes in Laws or regulations (government level)	3.
d. Natural disaster	4.

Q-19. As per your experience which of the following issues are more Significant and leave more negative impact on the project in KSA?

Financial issues	1	<input type="checkbox"/>
Contract related issues.	2	<input type="checkbox"/>
Owner related issues.	3	<input type="checkbox"/>
Design process related issues.	4	<input type="checkbox"/>
Behaviour related issues.	5	<input type="checkbox"/>
Contractor related issues.	6	<input type="checkbox"/>

Project implementation related issues.	7	<input type="checkbox"/>
External issues.	8	<input type="checkbox"/>

Q-20. Please rank the below mentioned categories of issues being faced by project in terms of their role in causing a constructional claim to happen from most relevant (important) to least relevant (important) in KSA.

a. Financial issues	1.
b. Contract related issues.	2.
c. Owner related issues.	3.
d. Design process related issues.	4.
e. Behaviour related issues.	5.
f. Contractor related issues.	6.
g. Project implementation related issues.	7.
h. External issues	8.

Section Four: Claim settlement procedure in KSA

Method of claims resolution in Saudi Construction Project

Q-1. Please specify, as per your experience, the extent of which the following conflict resolution methods are adopted to settle construction claim in public sector in KSA?

I. Negotiation				
Almost always	Often	Sometimes	Seldom	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation				
Almost always	Often	Sometimes	Seldom	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Arbitration				
Almost always	Often	Sometimes	Seldom	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Litigation				
Almost always	Often	Sometimes	Seldom	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-2 Please select as per your experience and knowledge, how the following resolution methods could be classified in terms of following factors with reference to KSA?

- I. Time taken for resolution
- II. Cost spent on resolution
- III. Parties Trust on the method in terms of fairness and legitimacy of decisions.
- IV. Support of Legislative framework
- V. Fear of decision bindings
- VI. Awareness and understanding
- VII. Readiness to Adapt

I. Time taken for resolution

I. Negotiation						
0-1 months	1-3 months	3-6 months	6-12 months	1-3 years	3-5 years	More than 5 years
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

II. Mediation						
0-1 months	1-3 months	3-6 months	6-12 months	1-3 years	3-5 years	More than 5 years
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)						
0-1 months	1-3 months	3-6 months	6-12 months	1-3 years	3-5 years	More than 5 years
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

IV. Arbitration						
0-1 months	1-3 months	3-6 months	6-12 months	1-3 years	3-5 years	More than 5 years
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

V. Litigation						
0-1 months	1-3 months	3-6 months	6-12 months	1-3 years	3-5 years	More than 5 years
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>

II. Cost spent on resolution

I. Negotiation				
Very high (staggering)	High	Moderate	Manageable	Very reasonable
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation				
Very high (staggering)	High	Moderate	Manageable	Very reasonable
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)				
Very high (staggering)	High	Moderate	Manageable	Very reasonable
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Arbitration				
Very high (staggering)	High	Moderate	Manageable	Very reasonable
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Litigation				
Very high (staggering)	High	Moderate	Manageable	Very reasonable
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Parties Trust on the method in terms of fairness and legitimacy of decisions.

I. Negotiation				

Not Trusted	Slightly Trusted	Moderately Trusted	Very Trusted	Extremely Trusted
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation

Not Trusted	Slightly Trusted	Moderately Trusted	Very Trusted	Extremely Trusted
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)

Not Trusted	Slightly Trusted	Moderately Trusted	Very Trusted	Extremely Trusted
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Arbitration

Not Trusted	Slightly Trusted	Moderately Trusted	Very Trusted	Extremely Trusted
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Litigation

Not Trusted	Slightly Trusted	Moderately Trusted	Very Trusted	Extremely Trusted
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Support of Legislative framework

I. Negotiation

Not Supported at all	Very little supported	Moderately supported	Supported	Highly supported
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation

Not Supported at all	Very little supported	Moderately supported	Supported	Highly supported
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)

Not Supported at all	Very supported	little	Moderately supported	Supported	Highly supported
1 <input type="checkbox"/>	2 <input type="checkbox"/>		3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Arbitration

Not Supported at all	Very supported	little	Moderately supported	Supported	Highly supported
1 <input type="checkbox"/>	2 <input type="checkbox"/>		3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Litigation

Not Supported at all	Very supported	little	Moderately supported	Supported	Highly supported
1 <input type="checkbox"/>	2 <input type="checkbox"/>		3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Fear of decision bindings

I. Negotiation

Very High	High	Neutral	Little	No fear
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation

Very High	High	Neutral	Little	No fear
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)

Very High	High	Neutral	Little	No fear
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Arbitration

Very High	High	Neutral	Little	No fear
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Litigation

Very High	High	Neutral	Little	No fear
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

VI. Awareness and understanding

I. Negotiation				
Well aware	Aware	Neutral	Little awareness	No awareness at all
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation				
Well aware	Aware	Neutral	Little awareness	No awareness at all
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)				
Well aware	Aware	Neutral	Little awareness	No awareness at all
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Arbitration				
Well aware	Aware	Neutral	Little awareness	No awareness at all
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Litigation				
Well aware	Aware	Neutral	Little awareness	No awareness at all
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

VII. Readiness to Adapt

I. Negotiation				

Very Easy	Easy	Neutral	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Mediation				
Very Easy	Easy	Neutral	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Dispute Adjudication boards (FIDIC)				
Very Easy	Easy	Neutral	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Arbitration				
Very Easy	Easy	Neutral	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Litigation				
Very Easy	Easy	Neutral	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Recommendations regarding claim resolution process in Saudi Construction Project

Q-3. To what extent do you agree that alternative ways to settle claims could be used for constructional claims in KSA?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-4. In your opinion what alternative options could be practiced in KSA with respect to settling constructional claims efficiently? Rank them in order of most favourable to least favourable.

a. Introduce electronic system and centralised data processing	1.
b. Introduce time limits to each process.	2.

c. Introduce standards for claim settlement procedural standards	3.
d. Introduce Centralised decision making	4.
e. Use modern technology and tools to collaborate and process information	5.
f. Introduce alternative system specific to project for quick decisions.	6.

Q-5. To what extent do you think that these procedural recommendations should be considered in KSA to improve claim settlement procedure? (Please select one option)

I. Introduce electronic system and centralised data processing

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Introduce time limits to each process.

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Introduce time limits to each process.

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Introduce Claim settlement procedural standards

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Use modern technology and tools to collaborate and process information

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

VI. Introduce alternative system specific to project for quick decisions.

Almost always	Often	Sometimes	Seldom	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-6. To what extent do you agree that Bureaucracy role could be improved in terms of its decision making and approvals by introducing time frames for doing so?

Strongly agree	Agree	Neutral	Disagree	Strongly
----------------	-------	---------	----------	----------

				disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-7. In your experience and knowledge what is the most adverse factor related to bureaucracy role that affects project progress in negative ways? (Please select one)

Time needed for approvals is very long	1 <input type="checkbox"/>
Verbal communications	2 <input type="checkbox"/>
Non-seriousness towards documentation.	3 <input type="checkbox"/>
Due to scarcity of professionals and over burden of projects longer time is taken for approvals.	4 <input type="checkbox"/>
Power dynamics	5 <input type="checkbox"/>
Contractors feeling pressurised so ignore written requirements for more work.	6 <input type="checkbox"/>

Q-8. Please rank the following adverse effect bureaucracy plays in KSA from most damaging to least?

a. Time needed for approvals is very long	1.
b. Verbal communications	2.
c. Non-seriousness towards documentation.	3.
d. Due to scarcity of professionals and over burden of projects longer time is taken for approvals.	4.
e. Power dynamics	5.
f. Contractors feeling pressurised so ignore written requirements for more work	6.

Q-9. Please select in your experience and knowledge, the following suggestions for improving the role of bureaucracy as well as making the processes efficient in KSA should be considered? Also will their implementation in KSA could be easily achieved?

- I. Introduce interim committees assigned to a specific project. The committee's responsibility of keeping transparent way of handling project as well as put time limits for every task and its approval.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- II. Introduce electronic system to accumulate all available information regarding a project accessible to all stakeholders. The system should be centralised in terms of its information updating and sharing.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- III. Have better tools introduced in construction industry for collaboration and communication. Use of modern technological tools can help in making processes transparent as well as quick

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IV. Revisit the procedure of contract awarding. Introduce more technical screening so that contractors could be selected as per their experience in industry.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- V. The construction industry needs standardisation for its processes. Introduce benchmarks to gauge each process in the construction process. Standardised project management criterion should also be mandated and evaluated on each process so that implementation could be reinforced

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VI. Standardise the construction sector. Introduce certification and grades for contractors. This will help in assembling contractors' pool and keeping the quality intact and right to the mark.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VII. Start training programs for all involved stakeholders of industry so that they are more aware about new trends, technological advancements and technological needs of modern day world.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

VIII. Revisit the standard form of contract. There is a need of understanding the new era need of “flexibility” and “ease” so that more and more foreign companies could be attracted as well as local contractors also upgrade. Some international form of contract like FIDIC can be used to fill the gap and persuade international firms to work in KSA.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-10. Relevant to KSA construction projects what factor is constituted as most important when resolving a constructional claim?

Speed of reaching settlement(Time efficiency)	1 <input type="checkbox"/>
Cost of reaching settlement (Cost efficiency)	2 <input type="checkbox"/>
Flexibility	3 <input type="checkbox"/>
Confidence of the stakeholders on the settlement process	4 <input type="checkbox"/>
Fairness	5 <input type="checkbox"/>
Non-adversarial with win-win situation	6 <input type="checkbox"/>
Retaining the relationship	7 <input type="checkbox"/>

Q-11. Please rank the following factors in order of their importance when settling constructional claims in KSA from most important to least important.

g. Speed of reaching settlement(Time efficiency)	7.
h. Cost of reaching settlement (Cost efficiency)	8.
i. Flexibility	9.
j. Confidence of the stakeholders on the settlement process	10.
k. Fairness	11.
l. Non-adversarial with win-win situation	12.
m. Retaining the relationship	13.

Q-12. In your opinion type of claim could be associated to any one particular kind of resolution methods?

Strongly agree	Agree	Neutral	Disagree	Strongly
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				disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-13. In preconstruction phase, in your opinion and preference, what processes need to be improved?

I. Site assessments.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Evaluation of the programs with reference to implementation

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Communication between the parties (design team, client, contractor, architect)

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Design process

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Construction documents used for bidding

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

VI. Definition of scope of work.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

VII. Information sharing and collaboration

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-14. To what extent do you agree that Design process is most detrimental and its inefficiencies causes claims in KSA?

Strongly agree	Agree	Neutral	Disagree	Strongly
-----------------------	--------------	----------------	-----------------	-----------------

				disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-15. Please select as per your experience and opinion, the following recommendations regarding issues in Design process that should be considered in KSA to improve claim occurrences and claim settlement? Also please rank how much you think that recommendation could be implemented in KSA?

- I. Have distinction of specification of works required at the early stages with consideration that perspective specification or performance specifications will suit the type of the project undertaken. Decision should also consider the stakeholder who will receive best value.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- II. Manage change requirements by owners with improved Communication and process documentation. Automation is required as if when change happed and subsequent approval, request for quotes, purchase orders and logs of data.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- III. Configure workflow tools or business process management tools. Another option is to introduce Visual dashboards that have colour codes to display action items and responsibility by status.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IV. Adopt Flexible pricing structure

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- V. Better Design tools should be adopted like BIM. The assessment of site, material requirements and design modelling all need to be automated and well collaborated.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VI. Work breakdown structures should be incorporated properly with updated data after changes.

I. Should be implemented					II. Ease of implementation in KSA				
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Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-16 Please select as per your experience and opinion what major recommendations could be worked upon to improve the overall design process in KSA so that it can be less damaging in later stages of construction and causing claims?

- I. Introduce BIM and such applications that can collate and collaborate information at all stages

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- II. Finalise Design specification before project implementation stage by modelling the design at the site conditions and recording outcomes.

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- III. Introduce Preliminary stage in between contract awarding and construction stage, where selected contractor is guided through the project site and relevant information to create his more accurate schedules, programs, mock-ups and shop drawings. The stage can also be more explicitly defined so that contractor and client are on same information level before start of implementation by introducing various checkpoints and agreement of design, material, shop drawing, time etc.

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IV. Introduce material accuracy and quality factor a part of design process. Mandate the requirements to be sorted out before finalising the bidding document so that bidding is more informed.

Definitely	Great option	Can't decide	Not good option	Never
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-17. To what extent do you agree that broader reforms in construction industry are needed to improve the situation of claim occurrences as well as efficient claims settlement in KSA?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-18. Please rank the following construction industry reforms that you think are most relevant to KSA

and much needed (most important to least important)

a. Certification and ranking of Contractors	1.
b. Standardization of performance benchmarks	2.
c. Mandate Project management standards.	3.
d. Training programs	4.
e. Supply chain management	5.
f. Use of new IT tools and apps	6.

Q-19. Please select as per your experience and opinion, the following recommendations regarding constructional industry reforms that should be considered in KSA to improve claim occurrences and claim settlement? Also please rank how much you think that recommendation could be implemented in KSA?

I. There should be certificate programs introduced.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. There should be grading of the contractors. Standardise the measures and introduce universal scale of performance measurement for them. Standard based grading model should be introduced to rank contractors as per their specialities, expertise, performance and projects undertaken.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. The construction industry in KSA needs to implement a broader performance measurement system. That system should introduce the guidelines to implement the project and recommend benchmark standards (especially for public sector projects).

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Mandate project management standards including control and monitoring systems. There should be a centralised system to accumulate information regarding progress of each contractor and project on these standards.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- V. Professional training of contractors should be introduced with refresher courses and certificates compulsory to pass after certain amount of time. (courses, training programs and certificate should be revisited time to time to keep them updated and as per modern advanced construction needs)

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VI. Supply chain management is one area that need reformed approach so that it could be managed properly. Introduce tools and applications along with prequalification of suppliers to retain the healthy pool.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VII. Adopt to new modern technological improvements by introducing, raising awareness, educating and then training industry professionals about modern IT tools and applications for communication, collaboration, design and build applications, project progress documentation etc.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-20. To what extent do you agree that training programs should be introduced in areas of project management, competency building and Information technological (IT) tools to improve the situation of claim occurrences as well as efficient claims settlement in KSA?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-21. Please rank the following training program priorities that as per your opinion are most relevant to KSA and much needed (most important to least important).

a. Professional level training for project	1.
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management	
b. Skill and capacity building.	2.
c. Behavioural approaches training.	3.
d. Conflict management and dispute resolution	4.
e. New IT tools and apps	5.

Q-22. Please select as per your experience and opinion, the following training programme recommendations that should be considered in KSA to improve claim occurrences and claim settlement? Also please rank how much you think that recommendation could be implemented in KSA?

- I. Training skills for management practices. Project management courses should be introduced and made compulsory for all stakeholders who in a way or other are involved in project management, controlling and evaluation.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- II. Training skills regarding conflict management is important to foster healthy environment. Arrange Conflict management trainings to make stakeholders aware of conflicts, their causes, and ways to handle them in non-adversarial ways. The awareness about conflict handling and options to resolve them is first step towards education.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- III. There should be seminars held about Behavioural approaches at workplaces and handling of disputes at workplaces to raise awareness and acceptance of needed change.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IV. Reinforce the need of adopting alternative dispute resolution methods as non-adversarial ways to handle disputes in construction industry by holding seminars and educating the relevant stakeholders, by different measures including releasing promotional, educational and raising awareness booklets and brochures.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>
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V. The Construction industry in KSA as a whole needs to adopt to the new better ways. This needs Ministry involvement in raising awareness and usage of IT trends on broader levels.

I. Should be implemented					II. Ease of implementation in KSA														
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult										
1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>

VI. Training of skill force is very important and this needs Ministry involvement too. Introduce such skill building courses at all levels form “skilled work force requirements in field” to “management level”. One way can be to introduce certification programs made compulsory to work in industry.

I. Should be implemented					II. Ease of implementation in KSA														
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult										
1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>

VII. Train KSA labour market and professional staff regarding new technological tools used in modern construction industry.

I. Should be implemented					II. Ease of implementation in KSA														
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult										
1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>

Q-23. To what extent do you agree that legal system framework needs robust amendments in KSA to support efficient claims settlement in KSA?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree					
1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>

Q-24. Please rank the following legal system amendments that as per your opinion are most relevant to KSA and much needed (most important to least important).

a. Dedicated legal committees	1.
b. Dispute resolution boards.	2.
c. Legal system training regarding construction industry and its conflicts.	3.
d. Support present system with introducing time priorities and time limits for decision making.	4.

Q-25 Please rank the following recommendations regarding legal system framework that should be considered in KSA to improve claim occurrences and claim settlement? Also please rank how much you think that recommendation could be implemented in KSA?

- I. There is a need of alternative legal framework dedicated to constructional claims so that settlement is quick and robust. There can be time limits introduced to settle matter more efficiently.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- II. Judicial training is very important regarding construction industry and its disputes.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- III. Introduce judicial committees system that are made specifically for a certain project on ad-hoc basis to settle constructional claims and disputes rapidly.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IV. Introduce dispute resolution boards that may be constitute of judicial personal as well as professionals from construction industry.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-26. To what extent do you agree that claim settlement procedure needs robust amendments in KSA to support efficient claims settlement in KSA?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

Q-27. Please rank the following claim settlement procedures improvements that as per your opinion are most relevant to KSA and much needed (most important to least important).

a. Amend standard form of contract for clauses regarding dispute management	1.
b. Introduce sequential steps in resolving dispute	2.
c. Claim presentation standards	3.
d. Standardise Claim analysis and forensic analysis of claims	4.
e. Standardise claim evaluation techniques and compensation analysis	5.
f. Regularise the claim settlement process	6.

Q-28. Please select as per your experience and opinion, the follow suggestions regarding improving claim settlement procedures in KSA. Also please rank how much you think that recommendation could be implemented in KSA?

- I. Amend standard form of contract with clauses introduced for sequential steps to be undertaken in case of dispute.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- II. Amend standard form of contract with clauses regarding dispute resolution methods that should be adopted.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- III. Amend standard form of contract with clauses regarding alternative dispute resolution methods

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IV. Revisit Procurement policy for project. There should be screening of contractors on basis of technical specialities” and “project specific requirements” so that such more relevant and professional contactors could be shortlisted.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
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- V. Introduce two level or three level tender processing where each step shortlist contractors on basis of technicalities, professional score and then cost.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VI. Regularise the claim settlement procedure. There should be legally defined standards that are relevant to construction industry.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VII. Introduce standardised process for claim presentation. Uniform process that should be followed throughout the industry. The claim submission, requirement of proof and support documents as well as presentation of proofs should be universally known and uniform across the industry.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- VIII. Regularise the claim analysis process. The regulations regarding forensic analysis of proofs presented and the laws adopted to evaluate the proofs should be publicly known.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

- IX. The compensation analysis also needs robust defined framework that should be followed through the industry. These norms should be defined in order to create trust and raise positive perception regarding fairness of the system.

I. Should be implemented					II. Ease of implementation in KSA				
Definitely	Good option	Can't decide	Not good option	Never	Very easy	easy	Moderate	Difficult	Very difficult
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

									<input type="checkbox"/>
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Q-29. What is the most important factor that in your experience should be considered for amendments in standard form of contract used in KSA? (Please select one, in case of others option please specify the recommendation)

Lacking/unclear provisions regarding claim submission, forensic analysis and evaluation.	1	<input type="checkbox"/>
Unfair Risk allocation.	2	<input type="checkbox"/>
Undefined liabilities and obligations	3	<input type="checkbox"/>
Unclear clauses about Claim settlement procedure to follow	4.	<input type="checkbox"/>
Poor contract drafting practices.	5.	<input type="checkbox"/>
Others(specify)	6.	<input type="checkbox"/>

Q-30. Please rank the following factors that in your opinion should be considered for amendments in standard form of contract used in KSA?

I. Lacking/unclear provisions regarding claim submission, forensic analysis and evaluation

I. Factor importance					II. Factor priority				
Not significant	Slightly significant	Neutral	Slightly significant	Extremely significant	Not preferred	Slightly preferred	Moderately preferred	Very preferred	Extremely preferred
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

II. Unfair Risk allocation.

I. Factor importance					II. Factor priority				
Not significant	Slightly significant	Neutral	Slightly significant	Extremely significant	Not preferred	Slightly preferred	Moderately preferred	Very preferred	Extremely preferred
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

III. Undefined liabilities and obligations

I. Factor importance					II. Factor priority				
Not significant	Slightly significant	Neutral	Slightly significant	Extremely significant	Not preferred	Slightly preferred	Moderately preferred	Very preferred	Extremely preferred
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

IV. Unclear clauses about Claim settlement procedure to follow

I. Factor importance					II. Factor priority				
Not significant	Slightly significant	Neutral	Slightly significant	Extremely significant	Not preferred	Slightly preferred	Moderately preferred	Very preferred	Extremely preferred
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

V. Poor contract drafting practices.

I. Factor importance					II. Factor priority				
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Not significant	Slightly significant	Neutral	Slightly significant	Extremely significant	Not preferred	Slightly preferred	Moderately preferred	Very preferred	Extremely preferred
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>