

Stakeholder Analysis in Libyan Construction Industry

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ABSTRACT

Scholars in the construction management field have highlighted the importance of analyzing and managing the project stakeholders effectively, since the project success or failure is related to their perceptions of the value created by the project, and the nature of their relationship with the project team. This study intended to facilitate the analysis of the construction industry stakeholders by providing an original framework model. This framework displays a clear process for stakeholders' identification, prioritization, and classification. And its results provide the basic information needed to engage and manage the stakeholders efficiently in the construction projects. In order to apply this framework in Libyan construction industry (LCI), a questionnaire survey has been conducted by using an internet questionnaire forums and also by distributing printed copies. The survey has targeted the Libyan academic researches and industry professionals for their reviews.

The application of the framework in LCI and the analysis of the survey responses have resulted an identification of twenty one stakeholders involved in Libyan construction projects in addition to their roles, objectives and impact in the projects, and a prioritization of these stakeholders based on the salience of their attributes towards the project. Furthermore, based on these results, a classification of the identified parties has made by positioning them in stakeholder assessment matrix.

Keywords: Stakeholder Analysis, Stakeholder Identification, Prioritisation, Stakeholder Salience, Salience Assessment Matrix, Libya Construction Industry, Framework Model.

ÖZ

İnşaat yönetimi alanındaki akademisyenler, proje paydaşlarını etkili bir biçimde analiz etme ve yönetmenin önemini vurgulamaktadırlar çünkü projenin başarılı olup olmaması; onların projenin yarattığı değer hakkındaki algılarına ve proje ekibiyle olan ilişkilerine bağlıdır. Bu çalışma, inşaat endüstrisinin paydaşlarının analizini, orijinal bir çerçeve model geliştirerek kolaylaştırmayı amaçlamaktadır. Bu çerçeve, paydaşlar için çok açık bir süreci ortaya koymaktadır: Tanımlama, önceliklendirme ve sınıflandırma. Sonuçlar, paydaşların etkili bir şekilde inşaat projelerine dahil olması ve bu projeleri yönetmesi için ihtiyaç duyulan temel bilgiyi sağlamaktadır. Libya inşaat endüstrisindeki (LİE) bu çerçeveyi uygulamak için, internet anket forumları kullanılarak ve basılı kopyalar dağıtılarak bir araştırma anketi oluşturulmuştur. Araştırmaya, Libyalı araştırmacı akademisyenler ve endüstride çalışan profesyoneller görüşleri alınmak üzere dahil edilmiştir.

LİE’ndeki bu çerçevenin uygulaması ve araştırma cevaplarının analizi, Libya inşaat projelerine dahil olan yirmi bir paydaşın tanımı ve buna ek olarak, rolleri, amaçları, projelerdeki etkileri ve projeye olan katkıları doğrultusunda paydaşların önceliklendirilmesine ilişkin bir sonuç ortaya çıkarmıştır. Ayrıca, bu sonuçlara dayanarak tanımlanan taraflar paydaş değerlendirme matrisine koyularak onların bir sınıflandırması yapılmıştır.

Anahtar Kelimeler: Paydaş analizi, Paydaş Tanımlama, Önceliklendirme, Paydaş Belirginliği, Pelirginlik Değerlendirme Matrisi, Libya İnşaat Endüstrisi, Çerçeve Model.

DEDICATION

This thesis is dedicated to my family Hraisha, my father, mother, brother and sister, and for my country Libya with hope that the safe and peace will prevail in all its cities.

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LIST OF SYMBOLS AND ABBREVIATIONS

\bar{x}	Mean score of the values
Σ	Summation of the total scores
x	Each value in the population
N	The total number of scores
W	Weight given to each factor by the respondents and ranges from 0 to 10
LCP:	Libyan construction projects
LCI:	Libyan construction industry
RII:	Relative Important Index
SMV:	Statistical Mean Value
SSI:	Stakeholder Salience Index
PMBOK:	Project Management Body of Knowledge, published by PMI
PMO:	Project Management Office
PMI:	Project Management Institute
SM:	Stakeholder Management
SA:	Stakeholder Analysis

Chapter 1

INTRODUCTION

1.1 Background of the research:

1.1.1 Why manage stakeholders in construction projects

In the field of construction industry, numerous researchers (Yan et al., 2014; Achterkamp and Vos, 2008) have acknowledged that project failure is mostly not the result of lacking or ineffective project management applies, but of inappropriate social interactions between the project stakeholders. The project's success or failure is strongly influenced by both the expectations and perceptions of its stakeholders, and the capability and willingness of project managers to manage these expectations to avoid any disputes or conflicts among the project parties (Bourne and Walker, 2005).

Accordingly, researchers have realized the significance of stakeholder management in construction projects and have therefore paid more attention to it. Furthermore, the nature of construction projects that having different levels and types of interests from various stakeholders, require a systematic approaches and suitable skills from the project management team to accommodate stakeholder concerns and to accomplish the best value of project outcome (Yan et al., 2014). Stakeholder management (SM) is regarded as an efficient approach for fulfil this needs by bringing stakeholder concerns to the surface and developing healthy stakeholder relationships (Bourne and

Walker, 2005) which will turn to decrease their interaction conflicts and help to achieve their expectations in the project.

1.1.2 The importance of stakeholder analysis in managing project parties

Stakeholder analysis has considered as a fundamental task of stakeholder management. In other words, managing any project stakeholders successfully depends basically on how effective is the methods and approaches that used in analysing these stakeholders. Stakeholder analyses are now arguably more important than ever because of the increasingly interconnected nature of the projects activities. Choose any issue in the project – bidding, contract, cost, quality or schedule issues- and it is clear that ‘the issue’ encompasses or affects numerous people, groups and organizations, positively or negatively. In this shared power environment, no one is fully in charge; no organization ‘covers’ all sides of the project issues (Kettl, 2002). Instead many individuals, groups and organizations have impact or some partial responsibility to act in the project (Bryson, 2004).

Accordingly, the challenge for the construction project manager is to evaluate stakeholder needs and expectations in relation to their attributes and the main purposes of the project in order to determine which needs and expectations are to be fulfilled (Olander, 2007). Consequently, a lot of construction managers depend on the stakeholder analyses methods to gain useful and accurate information about those persons and organizations who have an interest in the project. This information can be used to develop action plans to increase support of some stakeholders and decrease the negative influences of others; and to guide the engagement process of the stakeholder in order to accomplish healthy project delivery.

1.2 Problem Statement

Libya is considered by the World Bank 'Upper Middle Income Economy', along with only seven other African countries substantial revenues from the energy sector, coupled with a small population, give Libya one of the highest per capita GDPs in Africa (OPEC, 2015). However, Libyan construction industry and its associated processes and operations appear to be restricted by many obstacles and issues. According to many Libyan researches (e.g. Shebob, 2012 and Grifa, 2006) a delays in the project delivery, overrun the projects budget and failure to accomplish the projects objectives are the main issues behind the slow deployment of LCI.

All of these issues are mainly a result of conflicts, disputes, and poor relations among the project stakeholders. Project managers having unclear objectives of stakeholder management, difficulty to identify the “invisible” stakeholder, and inadequate communication with stakeholder.

Consequently, there is a dire need for more studies and researches about the stakeholder management field in LCI. It is crucial to explore more systematic approaches can fit the need of analysing and managing LCP stakeholders. Approaches can facilitate the processes of stakeholder identification, prioritization and classification, which can led to enhance the engagement and the communication between managers and their stakeholder, and therefore override the mentioned issues, and achieve a healthy projects delivery.

1.3 Aim and Objectives

The aim of the research study is to develop a systematic approach for analysing the stakeholders in Libyan construction projects. The system expected to provide a base for effective stakeholder management, and optimize the value creation of the Libyan construction project through stakeholder identification, prioritization and classification. To achieve this aim, the following objectives were set:

1. To review the literature and identify the methods and approaches used to analyse the stakeholders in construction field.
2. To build on these approaches and create a framework model that can fit the need of analysing the stakeholders in LCI and facilitate the processes of identification, prioritization and classification of these parties.
3. To conduct interviews and survey in construction industry to evaluate the identification of the stakeholders and measure the salience attributes of each stakeholder in order to prioritize their impact in LCP.
4. To identify and rank the salience of LCI stakeholders, based on the measuring of each stakeholder's attributes.
5. To identify the proper position and classification of each identified stakeholder in LCP, based on the assessment of their salience and ability to impact in these projects.

1.4 Limitations

Although the provided stakeholder analysis framework in this study is applicable to any construction industry, the research is limited to the application of this framework in LCI. The respondents of the questionnaire survey were selected only from Libyan

academic researches and industry professionals (e.g. project managers, engineers, contractors, and consultants).

1.5 Methodology

The key research methods adopted to achieve the objectives of the research study are the literature review, the development of stakeholder analysis framework, and interviews and industry survey conduction with data collection and analysis. The adapted methods in this study are discussed briefly below.

Literature review: A literature review was carried out to summarise the previous research findings in the area of stakeholder analyses in construction industry. The literature review covered the base of stakeholder theory, discussed the stakeholder analyses processes in the context of stakeholder management, and explored a various methods of stakeholder's identification, prioritization and classification. The findings from the literature review were used to design a framework to analyse the construction industry stakeholders.

Development of a stakeholder analysis framework model: the suggested framework model that has used to analyse the stakeholders in LCI is consists of three phases. The first phase is stakeholder identification and aimed to identify and rank the involved parties in LCI. Whereas the aim of the second phase is to facilitate the application of the stakeholder salience approach in order to prioritise the impact of the identified stakeholders in the construction projects. Eventually, the third phase intended to provide the classification of the identified stakeholders and identify their positions in the project based the results of the prior phases.

Industry survey: the industry survey were conducted to fulfil the requirement of suggested framework phases. It is aimed to assess the identified LCI stakeholders and to evaluate the salience attributes of these stakeholders in order to prioritise their impact in Libyan construction projects.

Results analysis methods: in order to obtain reliable results for the study, the following tools were used in different phases towards the application of the framework in LCI:

1. Statistical mean value (SMV)
2. Relative Importance Index (RII)
3. Stakeholder salience Index (SSI)
4. Salience assessment Matrix

1.6 Thesis Structure

The thesis comprises five main parts. The first part (Chapter 1) includes a background of the research study, problem statement, aim and objectives research limitations, methodology, and thesis structure.

The second part of the thesis (Chapter 2) provides a detailed description of previous literature related to the construction stakeholder analysis and management. The literature review covered the base of stakeholder theory, discussed the stakeholder analyses processes in the context of stakeholder management, and explored a various methods of stakeholder's identification, prioritization and classification.

The third part (Chapter 3) describes the methods and approaches used to obtain the results of this study, and provide a detailed explanation for the phases and processes of the suggested stakeholder analysis framework.

The forth part (Chapter 4) presents the results of applying the stakeholder analysis framework in LCI. It contains a discussion of the results of the stakeholders' identification and prioritization. According to these results, the chapter presents the position of each stakeholder in the salience assessment matrix.

The last part of the thesis (Chapter 5) presents the main conclusions drawn from the development of stakeholder analysis framework model and the three main parts of research results, and suggests recommendations for Libyan project managers and future studies.

Chapter 2

LITERATURE REVIEW

2.1 General

The intent of this chapter is to provide a theoretical background required for the reader to understand the relation between the work that has been done in this research and the development of theories and methods provided from previous studies in construction stakeholder analysis area.

Firstly, the key concepts regarding the stakeholder analysis and management have been reviewed, considering the broad and narrow definitions of the stakeholder term and the use of stakeholder theory in the construction projects.

Then, the stakeholder analysis process in the context of stakeholder management has been covered by discussing the scholars work regarding the construction industry. Eventually, reviewing of the important details of the stakeholder analysis process has been made by declaring the broad perspective, needs and the beneficial applications of this process in the construction industry.

2.2 Define key concepts

2.2.1 Stakeholder definition

In order to analyse and manage stakeholders successfully in the construction projects, the answer must be clarified for the question: who are the stakeholders?

Even though several studies have been devoted to examining the stakeholder concept, certainly not single definition of a stakeholder has been commonly accepted.

The Shorter Oxford English Dictionary defines a stake as "that which is placed at hazard, esp. a sum of money, etc. deposited or guaranteed, to be taken by the winner of a game, race, contest, etc." It also defines "To have a stake in (an event, concern, etc.)" as "to have something to gain or lose by the turn of events." A stake then is a contribution in undertaking or an interest. It could also mean a demand for something or a claim (legal, or tacit). Carroll and Buchholtz (2002) summarized all these descriptions for the term stake by the meaning 'right' for something which can be either legal or moral.

A stakeholder can be an individual, a group or an organization. Most studies specify that there are two sorts of definitions of the concept of stakeholder: narrow definitions and broad definitions (Chinyio & Olomolaiye, 2010).

The literature contains many narrow definitions of the stakeholder (Olander, 2007; Bourne and Walker, 2005; Cleland and Ireland, 2002; Madsen and Ulhøi, 2001; Clarkson, 1994); stakeholders are those who can make some risks in the investment of capital, human resources or something of value in a company (Clarkson, 1994) or can contribute in the form of knowledge or support or can effect or be effected by a project (Bourne and Walker, 2005); those who have involvement in decision-making as well as who benefits from the consequences of such a decision (Phillips, 2003).

The term stakeholder excludes those parties that do not have stake or ownership in the organization but are capable of applying influence on the implementation of a project using non-economic approaches. For illustration, although the local residents and environmental institutions may not have a direct stake in the project, but they may influence by the implementation of the construction negatively and therefore they may oppose the construction somehow. Consequently, the definition of stakeholder should not simply be centered on economic factors.

On other hand, the stakeholder term can also defined broadly to include those who only have an interest in a specific issue (Savage et al., 1991; PMI, 1996, 2004; Scheffran, 2006) those who have an assigned interest in the success of a project and the environment within which the project operates (Olander, 2007); those who essentially affect or are affected by the achievement of organizational objectives (Freeman, 1984). However, such definitions are open to the criticism that there is little value in the stakeholder concept if everyone is a stakeholder (Mitchell et al., 1997; Sternberg, 1997; Phillips, 2003).

In order to be able to precisely identify the construction projects stakeholder, we must have a formal and complete definition concerning their characteristics in the construction field. Many scholars have provided different definitions, usually tailored to their particular area of study. Chinyio and Olomolaiye (2010) present a chronology that shows how broad and narrow definitions of the term stakeholder evolved over the years for varies scholars starting with Freeman in 1984 the scholar that he put the milestone for the stakeholder management research (Yan, Qiping, & Yang, 2014). A summary of that chronology is shown in Table 1.

Table 1: Broad and narrow view for the stakeholder definitions for various authors (adapted from Chinyio & Olomolaiye, 2010).

Category	Definition	Author
Broader view	In a broad sense, stakeholders can be considered as those individuals or groups that have an interest or concern in a particular issue.	Scheffran, 2006
	Project stakeholders are individuals and organizations that are actively involved in a project or whose interests may be affected as a result of project execution or project completion.	PMI, 2004
	Those individuals, groups or organizations having a contractual, financial or ethical interest in the decisions and actions of the organization.	Rotarius and Liberman, 2000
	Stakeholders include those individuals, groups and other organizations who have an interest in the actions of an organization and who have the ability to influence it.	Savage <i>et al.</i> , 1991
	An individual, individuals, team or teams affected by a project.	Juliano, 1995
	Any group or individual who can affect or is affected by the achievement of an organization's objectives.	Freeman, 1984
	Individuals and organizations who are actively involved in a project , or whose interests may be positively or negatively affected as a result of project execution or successful project completion.	PMI, 1996
Stakeholders supply a project with critical resources, bear additional risk or have the power to affect the outcome of a project.	Post and Preston, 2002	
Narrower view	Stakeholders are individuals or groups with a legal, economic, moral and/or self-perceived opportunity to claim ownership, rights or interest in a firm and its past, present or future activities – or in parts thereof.	Madsen and Ulhøi, 2001
	Stakeholders are individuals or groups who have an interest or some aspect of rights or ownership in a project, can contribute in the form of knowledge or support or can impact or be impacted by a project.	Bourne and Walker, 2005
	Stakeholders are persons or groups that have, or claim, ownership rights or interests in a project and its activities: past, present or future.	Clarkson, 1995; Cleland and Ireland, 2002; Preble, 2005
	Those bearing some form of risk as a result of having invested some form of capital, human or financial, or something of value , in a firm. These stakeholders are those without whose participation the corporation cannot survive.	Clarkson, 1994
	Project stakeholders are individuals or a group of people who have a vested interest in the success of a project and the environment within which the project operates.	McElroy and Mills, 2000; Olander, 2007
The fundamental idea of the stakeholder is that he or she or it has a stake in an organization . Stakeholders are those that contribute voluntarily or involuntarily to the organization's wealth-creating capacity and activities. They are, therefore, its potential beneficiaries and/or risk bearers.	Post and Je, 2002	

Probably the most commonly accepted definition from the researchers regarding the construction projects (Hallahan, 2005; Olander, 2007; Yan et al., 2014; Bourne and Walker, 2005), which has adopted to be the basis for this study research is the one that is defines the stakeholder as:

“Any group, organizations or individuals who can impact or be impacted by the project work or its results, has contribution in the form of knowledge or support, or having ownership or interest in the project”.

2.2.2 Stakeholders in construction

There are a considerable number of stakeholders in construction undertakings, just as other endeavours. As shown in Figure 1 the checklist of stakeholders in a construction projects is often big and would comprise the owners and users of facilities, project managers, facilities managers, designers, shareholders, legal authorities, employees, subcontractors, suppliers, process and service providers, competitors, banks, insurance companies, media, community representatives, neighbours, general public, government establishments, visitors, customers, regional development agencies, the natural environment, the press, pressure groups, civic institutions, etc. (Newcombe, 2003; Smith and Love, 2004). Each of these would affect the development of a project at some stage. Some bring their influence to bear more often than others. If diverse stakeholders are present in construction projects, then the construction industry should be able to analyse and manage its stakeholders (Chinyio & Olomolaiye, 2010).

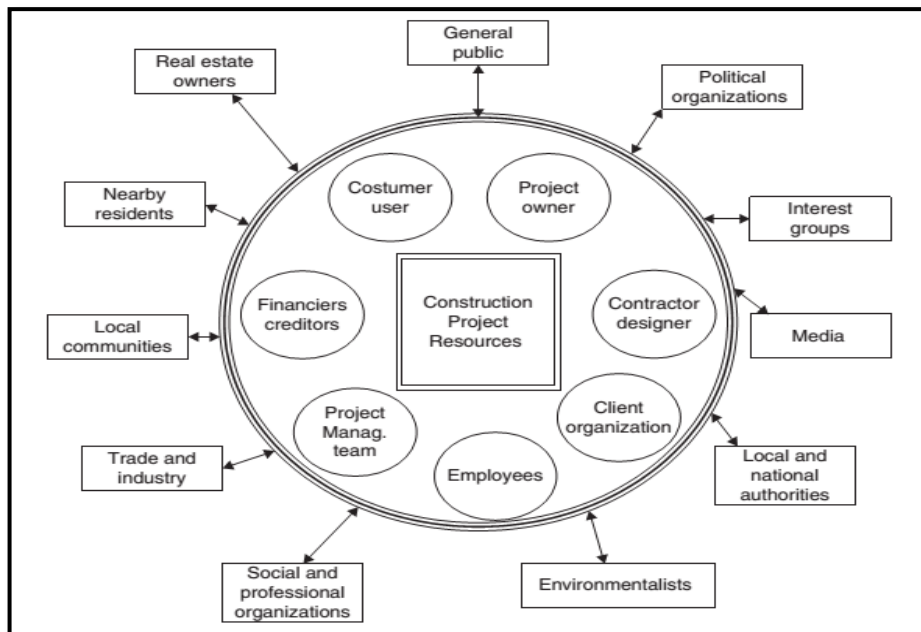


Figure 1: Construction project stakeholders (Adapted from Chinyio et al. 2010).

2.2.3 Stakeholder theory

The basic concept of stakeholder developed by Freeman (1984) and more recently Freeman et al. (2010) which focused in the business and strategic management of firms from stakeholders approaches not specifically for our purpose in this research (stakeholders in construction side). Stakeholder theory is “a theory about how business actually does and can work.” (Freeman et al., 2010) and its deeper philosophical viewpoints are:

Can the leaders of any business make decisions about conducting the business without taking in to account the effect of these decisions on all those who will be impacted by the decisions? Is it possible to make the business decisions isolated from the impact of their ethical considerations? (Freeman et al., 2010).

Freeman shows in his theory the great value to be gained in considering how the stakes of each stakeholder or stakeholder group contribute to the value creation of

business process and what the executive role is in the relationship management of the stakeholder (Freeman et al., 2010). Consequently, the main purpose of the stakeholder theory is to help corporate managers comprehend their stakeholder environments and manage them more efficiently. A greater purpose is to help corporate managers improve the value of the outcomes of their actions while minimizing any damage to stakeholders. In essence, stakeholder theory concerns relationships between corporations and their stakeholders (Logsdon and Wood, 2000)".

Based on this fundamentals of the stakeholder's theory, stakeholder analysis has been applied to many diverse areas of study and applications such as economics, corporate governance, marketing, corporate social responsibility, business ethics, organizational studies, environmental issues and more important the construction industry. Stakeholder theory affords the root for stakeholder identification, classification, and prioritization and to understand their behaviour (Aaltonen, 2011).

In the construction firms perspective the concept of stakeholder management is accepted as a theory especially in academic discourse (Chinyio & Olomolaiye, 2010b). Stakeholder management theory evolved from business management and aims to define, comprehend, analyze and manage stakeholders. The key considerations in practical stakeholder management should include the following (Caroll and Buchholtz, 2006):

- Who are our project stakeholders?
- What are their stakes in the project?
- What challenges or pressures do they present in the project activities?
- What chances do they present?

- What strategies or actions should we use to engage our stakeholders?
- What responsibilities do we have towards our stakeholders?

It has been considered that over 95% of organizations in construction industry are either small- or medium-sized enterprises. To some of these companies, maintaining or losing a customer can be very serious to their continued existence. Stakeholder management will enable construction firms to understand their stakeholders better, manage them appropriately and increase repeat business opportunities (Chinyio & Olomolaiye, 2010).

2.2.4 Key stakeholders

Key stakeholders are the main players in the construction organization or the project, holding high power and authority to influence in the decision making process in the firm or in the development of the projects. Main players are more likely than any other stakeholders to create difficulties in solving conflicts if their requests are not attended. One of the biggest challenge facing the project team in the construction projects are the process of identifying and classifying these key stakeholder of which have to be informed or satisfied and which of them have the minimal influence.

Keep informed stakeholders have big interest in the project (land owners, nearby residents, public in general, groups of interests, environmental bodies) and may be severe opponents to it but have partial power to influence project decisions.

Keep-satisfied stakeholders, conversely, hold high power to effect the project decisions (project owners, investors, authorities, legislative bodies, investors, media), but are often passive, meaning that conflicts with them may be avoided if they feel good with the implementation of the project.

The last set of stakeholders is the minimal effort group, who have small interest in the project, therefore raising few conflicts, and are not able to have a big influence on the decisions (project schedule or its quality, for instance). They do not worth a lot of attention to their decisions but they may assume other positions sometimes. For example, an environmental body may easily become a key player in a sensitive project.

2.3 Stakeholder analysis in the context of SM in construction

In order to identify the literature of stakeholder analysis process in the construction projects, it is appropriate to mention the context of this process in the SM practices. The aim of this section is to give the reader a clear picture about the need of SM in construction industry, illustrates the significance of SA as a part of SM, and to address the further steps of stakeholder analysis in the construction undertakings, in order to gain a healthy relationship between the stakeholders in every stage of the project.

2.3.1 Need for construction stakeholder management

Regarding the management of the construction projects many authors have clearly highlighted the extraordinary significance of effective stakeholder management in order to accomplish the best value of project outcomes (Beringer et al., 2013; Bourne and Walker, 2005; Karlsen, 2002; Littau et al., 2010; Winter et al., 2006; Yan et al., 2014). Numerous researchers have acknowledged that project failure is mostly not the result of lacking or ineffective project management applies, but of inappropriate social interactions between the project stakeholders (Achterkamp and Vos, 2008; Brown and Jones, 1998). Managing several stakeholders and maintaining an

acceptable balance between their concerns is crucial to successful project delivery (Karlsen, 2002).

The nature of construction projects that having different levels and types of interests from various stakeholders, require a systematic approaches and suitable skills from the project management team to accommodate stakeholder concerns and to accomplish the best value of project outcome (Yan et al., 2014). There is a dire need for effective coordination and general management of the different stakes in every stage in the construction undertakings. Stakeholder management (SM) is regarded as an efficient approach for fulfil this needs by bringing stakeholder concerns to the surface and developing healthy stakeholder relationships (Bourne and Walker, 2005) which will turn to decrease their interaction conflicts and help to achieve their expectations in the project.

2.3.2 Construction Stakeholder management literature body

There is a considerable contributions regarding the principles and applied approaches in engaging and managing stakeholders in both ordinary and large size construction projects. Using the academic database such as: ABI database, EI CompendexWeb, ISI web of knowledge, Scopus, and several bookstores on the web, Yang et al. (2011) and Yan et al. (2014) have addressed in their imperial studies in the previous construction SM practices. While the first article in 2011 lists 68 items, consisting of journal papers, international conference papers, theses, booklets, reports, and some chapters in eight books, Yan et al. (2014) as shown in the Table 2 lists 85 papers all of them are from academic journals.

Table 2: Distribution of journal papers in the construction SM field (adapted from Yan et al. 2014)

Journal title	Number of selected papers
Construction Management and Economics	15
International Journal of Project Management	15
Journal of Construction Engineering and Management ASCE	5
Project Management Journal	5
Building Research and Information	3
Automation in Construction	2
Engineering, Construction and Architectural Management	2
Facilities	2
Habitat International	2
Management Decision	2
Research Policy	2
AACE International Transactions	1
Architectural Science Review	1
Baltic Journal of Management	1
Cities	1
Civil Engineering and Environmental Systems	1
Desalination	1
Disaster Prevention and Management	1
Ecological Economics	1
Engineering Management Journal	1
Environmental Impact Assessment Review	1
European Journal of Industrial Engineering	1
Journal of Architectural Engineering	1
Journal of Civil Engineering and Management	1
Journal of Environmental Management	1
Journal of Facilities Management	1
Journal of Infrastructure Systems	1
Journal of Management in Engineering ASCE	1
Journal of Transport Geography	1
Journal of Urban Planning and Development ASCE	1
Journal of Water Resources Planning and Management ASCE	1
KSCE Journal of Civil Engineering	1
Land Use Policy	1
Proceedings of the Institution of Civil Engineers Municipal Engineer	1
Scandinavian Journal of Management	1
Structural Survey	1
Supply Chain Management — An International Journal	1
Sustainability	1
Sustainable Development	1
Systems Research and Behavioral Science	1
The TQM Magazine	1
Total	85

The content of these studies has been categorized by Yan et al. (2014) to four major themes namely (1) stakeholder interests and influences, (2) stakeholder management process, (3) stakeholder analysis methods, and (4) stakeholder engagement. Table 3 illustrates these four themes with distribution of publications by period. The table

specifies that researchers put their biggest effort in the “stakeholder management process” instead of the “stakeholder interests and influences” and “analysis methods”.

Table 3: identification of research themes with distribution of publications by period (Yan et al., 2014)

Research theme	Period (year)				Total	Percentage (%)
	1997-2000	2001-2005	2006-2010	2011-2014		
Stakeholder interests and influences	2	0	7	6	15	18
Stakeholder management process	3	4	13	8	28	33
Stakeholder analysis methods	2	5	8	3	18	21
Stakeholder engagement	0	1	13	10	24	28
Total	7	10	41	27	85	100

The process of the stakeholder management in the construction projects includes stakeholder identification, classification, analysis and strategy development (Cleland,1986) The main purpose of SM in construction projects is to gain stakeholder support in project execution and to make project activities “issue driven rather than stakeholder driven” (Jergeas et al., 2000). To attain this purpose, education, mitigation, communication, and compensation are four critical activities that the project team should constantly undertake during the entire SM process of the project (Jergeas et al., 2000).

Some scholars focus on the development of SM Models to facilitate the implementation of SM process and to achieve the best value of stakeholder interactions in the CP. Yang et al. (2011) has summarized these studies as shown in Table 4. However, it appears that there is no consensus on the best model. SM requires a formal structured methodology but such a formal approach has not yet

been fully established (Chinyio and Akintoye, 2008). Karlsen (2002) specify that no systematic and formal project stakeholder management process exists in real projects due to the random affair in the management of stakeholders, since there are no routine functioning strategies, plans, methods or processes.

Table 4: Stakeholder management process models in construction projects (adapted from Yang et al. 2011).

Scholars	Stakeholder management process models
Karlsen (2002)	Identification of stakeholders; analysing the characteristics of stakeholders; communicating and sharing information with stakeholders; developing strategies, following up.
Elias et al (2002)	Developing a stakeholder map of the project; preparing a chart of specific stakeholders; identifying the stakes of stakeholders; preparing a power versus stake grid; conducting a process level stakeholder analysis; conducting a transactional level stakeholder analysis; determining the stakeholder management capability of the R&D projects; analysing the dynamics of stakeholder interactions.
Young (2006)	Identifying stakeholders; gathering information about stakeholders; analysing the influence of stakeholders.
Bourne and Walker (2006)	Identifying stakeholders; prioritizing stakeholders; developing a stakeholder engagement strategy.
Olander (2006) adopted by Cleland (1999)	Identification of stakeholders; Gathering information on stakeholders; Identifying stakeholder mission; Determining stakeholder strengths and weaknesses; Identifying stakeholder strategy; Predicting stakeholder behavior; Implementing stakeholder management strategy.
Walker et al. (2008)	Identifying stakeholder; Prioritizing stakeholders; Visualizing stakeholders; Engaging stakeholders; Monitoring effectiveness of communication.
Jepsen and Eskerod (2009)	Identification of the (important) stakeholders; characterization of the stakeholders pointing out their (a) needed contributions, (b) expectations concerning rewards for contributions, (c) power in relation to the project; decision about which strategy to use to influence each stakeholder.

Regarding the thesis study, it is obvious that the stakeholder analysis processes including identification, prioritization and assessment are essential in all mentioned models in the table above, which indicates the significance of this processes in SM practices.

2.4 Stakeholder analysis

2.4.1 Broad Perspective

In various disciplines in the business world, stakeholder analysis is considered as an essential part of stakeholder management. Different scholars have various terms referred to the same concept of stakeholder analysis such as “social analysis” (Rietbergen-McCracken & Narayan, 1998), ‘stakeholder analysis and stakeholder synthesis’ (Goodpaster et al., 2002), “stakeholder power analysis”. The root of this term was in the political economy, but used firstly within the area of management science as a process to identify and address the interests of various stakeholders in business (Brugha & Varvasovszky, 2000; Grimble & Wellard, 1997). Altonen (2011) pointed out that stakeholder analysis is a process through which project managers try to comprehend and interpret the project’s stakeholder environment in order to be able to define the right type of action concerning different stakeholders.

In the organizational perspective, stakeholder analysis is a crucial part of the decision-making process, which involves the initial collecting and arranging of the information about stakeholders (Goodpaster et al., 2002). Bryson (2004), identified stakeholder analysis as, “A kind of art...deliberate to help public and non-profit managers or groups to think and act strategically over the course of a policy or strategy change cycle in such a way that good ideas worth executing can be found and implemented.” Other scholars state a different definition (Grimble, 1998) “A holistic method or procedure for gaining an understanding of a project, and assessing the influence of changes to that project, by means of identifying the key actors or stakeholders and evaluating their respective concerns in the undertaking.” The established guidelines for stakeholder analysis contain stakeholder identification,

characterization, and classification based on their attributes and interests, and decision making about stakeholder management strategy (Aaltonen, 2011).

2.4.2 Stakeholder analysis in construction industry

Regarding the construction field, stakeholder analyses are now arguably more important than ever because of the increasingly interconnected nature of the projects activities. Choose any issue in the project – bidding, contract, cost, quality or schedule issues- and it is clear that ‘the issue’ encompasses or affects numerous people, groups and organizations, positively or negatively. In this shared power environment, no one is fully in charge; no organization ‘covers’ all sides of the project issues (Kettl, 2002). Instead many individuals, groups and organizations have impact or some partial responsibility to act in the project (Bryson, 2004).

Accordingly, the challenge for the construction project manager is to evaluate stakeholder needs and expectations in relation to their attributes and the main purposes of the project in order to determine which needs and expectations are to be fulfilled (Olander, 2007). Consequently, a lot of construction managers depend on the stakeholder analyses methods to gain useful and accurate information about those persons and organizations who have an interest in the project. This information can be used to develop action plans to increase support of some stakeholders and decrease the negative influences of others; and to guide the engagement process of the stakeholder in order to accomplish healthy project delivery.

2.4.3 Construction stakeholder analysis methods

Stakeholder analysis in construction projects is an interpretation process used by project managers in analysing the project stakeholder environment, where stakeholder environment includes “all organizations, and relationships between them, that can affect or be affected by the project” (Aaltonen, 2011).

Several stakeholder analysis methods are presented in previous studies concerning stakeholder identification, classification and assessment. From an interpretation perspective, the different stakeholder identification and classification frameworks can be viewed as tools that support the development of a shared understanding or “collective mind” of the project team with regard to the stakeholder environment. Table 5 summarizes and classifies existing project stakeholder research with related different methods of stakeholder analysis process (Aaltonen, 2011) .

Table 5: project stakeholder analysis methods with corresponding research (Aaltonen, 2011)

Methods of stakeholder analysis process	Author
Identifying stakeholders and their interest, measure the interest, try to predict stakeholders’ future behavior	Cleland’s (1986)
Stakeholder group categorization: supportive, mixed, blessing, not-supportive, marginal	Savage et al., 1991
Classification based on power, legitimacy, urgency	Mitchell et al., 1997
Power/interest matrix	Johnson and Scholes, 1999; Olander and Landin, 2005
Stakeholder mapping	Winch and Bonke, 2002
Stakeholder commitment matrix	McElroy and Mills, 2003
Outline tool	Andersen et al., 2004
Stakeholder impact index	Olander, 2007
Role-based stakeholder models	Achterkamp and Vos, 2008; Vos and Achterkamp, 2006
Stakeholder Circle – a tool for measuring and visualizing stakeholder influence	Bourne and Walker, 2006
Application of uncertainty management framework, SHAMPU	Ward and Chapman, 2008

2.5 Applications of stakeholder analysis:

In this section basics of the background necessary for the reader to understand details of our work are presented. Firstly the identification and prioritization processes and approaches are discussed. Then, the structure models of the stakeholder are covered.

2.5.1 Stakeholder identification

Stakeholder identification is frequently considered as the primary step in stakeholder analysis (Cleland and Ireland, 2007; Jepsen and Eskerod, 2008; McElroy and Mills, 2000) and several approaches are available. The most common approach is to categorize them into different groups depending on their relative position in the project, their attributes of power, legitimacy and urgency, level of involvement in the project management process or legal relations between them and the project.

The identification process according to the project management institution (PMI, 2013) is the procedures of “identifying the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success”. Based on that process PMI (2013) indicates that project stakeholders generally comprise a project manager, performing organization (the firms whose employees directly participate in the project), customer/user, project team members, sponsor, project management team and the project management organization (PMO).

Similarly, Walker (2003) pointed out that the project stakeholder comprises project sponsor, end users, client, core project team, and the team members together with

community and external groups and shadow team members—people who have informal relations with the project.

Whereas Tuman's approach (2006) for project stakeholder's identifications is to consider four main groups, namely project champions, project participants, community participants, and parasitic participants. Among these, project participants include people who bring the project into being, such as the client, customers, developers and investors. Project participants are those who are responsible for planning and implementation; for example project team, engineers, workers and contractors. Communication participants, In contrast, contain groups and/or individuals who are directly affected by the project; for example the social, economic and natural environment within which it is implemented (Nguyen et al. , 2009).

On the other hand, some scholars have shared the view that all project stakeholders fall into two main categories: internal and external (e.g. Winch, 2004; Pinto, 1996; Calvert, 1995; and Turner, 1995) According to Pinto (1996) and Cleland (1999), internal stakeholders contain top management, functional management, accountants, suppliers, contractors, users and project team members. External stakeholders, In contrast, are local communities, real state owners, competitors, and environmental/political/social groups and organizations (see Figure 2).

Depending on the relationship the closeness between stakeholder and project objectives, stakeholders are classified as primary or secondary (Clarkson, 1995; and McElroy and Mills, 2000) and direct or indirect stakeholders (Lester, 2007). Cleland and Ireland (2007) pointed out that primary stakeholders usually covers those who have legal relationships with the project and a responsibility in the project

management processes—such as cost, time, quality management. In addition, direct stakeholders are people who directly engage in the planning, executing and management processes of a project (Lester, 2007).



Figure 2: Internal and external stakeholders for construction projects (Adapted from Chinyio & Olomolaiye, 2010).

In order to facilitate the identification process of the stakeholders, several scholars suggests some key questions to recognize the influence scope of stakeholders based on their involvement with the construction project activities. For instance, questions stated by Bourne (2015) are,” Who might be positively or negatively impacted by the outcome of your project? Who are the clients or customers the output will serve? Who represents the governance and oversight for this project both internally and externally? Who are the service providers, suppliers of resources, consumables, equipment or components? And “Who will be jointly engaged in the execution of the project activities?

Additionally, Various tools and techniques suggested from several scholars and institutions (e.g. Bass, 2001; Grimble, 1998; et al., 2009; PMI 2013) to help the project management team collect the information required to identify the stakeholder such as: expert opinion (key informants such of Senior management, Industry groups and consultants), focus groups, semi-structured interviews, snowball sampling, written records and or a combination of these techniques.

All of the references cited above highlight the importance of identifying stakeholders, and although several scholars offer examples, or broad guidance for this identification, still there is a deficiency in providing a concrete models or approaches for identifying stakeholders within a specific project (Sharp et al. 1999).

The lack of concrete approaches in the literature of stakeholder identification motivate Sharp et al. (1999) to address five major steps that could be helpful to capture all important stakeholder in the project namely; (1) Identify all specific roles within the baseline stakeholder group; (2) Identify ‘supplier’ stakeholders for each baseline role; (3) Identify ‘client’ stakeholders for each baseline role; (4) Identify ‘satellite’ (stakeholder that could interact with the baseline in a variety of ways) stakeholders for each baseline role ; (5) Repeat steps 1 to 4 for each of the stakeholder groups (Sharp et al. 1999).

Other researchers focus on identifying the stakeholder by their attributes in relation of the project. Mitchell, Agle, and Wood, (1997) have the pioneer work of classifying stakeholders by their possession of one or more of the next attributes: the stakeholder power to influence the project activities; the legitimacy of the

stakeholder relationship to create authority in the project, and the urgency of the stakeholder claim on the project work (Grossi, 2003).

The power attribute in the project has been defined by Handy (1993) to five main sources namely: physical power; positional power; resource power; expert power; and personal power. Whereas Dahl (cited in Mitchell et al., 1997) shares the view that power is ‘a relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not otherwise have done. This power of the stakeholder depend on his ability to gain access to coercive, utilitarian, or symbolic in the relationship. Coercive power is that associated with the use of physical resources of force, restraint, or violence. Utilitarian power is that based on the exchange of material or financial resources. Eventually, the Symbolic power is that based on symbolic resources - normative symbols, similar to prestige and esteem; and social symbols, such as, love and acceptance (Grossi, 2003; Nguyen et al., 2009).

Legitimacy, on the other hand defined as ‘a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions’ (Suchman,1995). Whereas Mitchell et al. (1997) pointed out that legitimacy is a social good—something larger and more shared than mere self-perception that may be defined and negotiated differently at various levels of social organization. However, the above discussion gives a sense that legitimacy reflects the contractual relations, legal and moral rights in relationships between stakeholders and a project (Nguyen et al., 2009).

Urgency is described by Mitchell et al. (1997) as the ‘degree to which stakeholder claims call for instant attention’. They argue that urgency only exists when two conditions are met: (1) when there is a time-sensitive nature of claim or relationship; and (2) when that relationship or claim is important or critical to the stakeholder. Instead, we prefer in our research to follow other studies (Grossi, 2003) that suggest to identify this urgency attribute as criticality since this term involves both urgency (time sensitivity) and importance sub-attributes. In this way, some claim that is perceived as important but still not urgent can be considered as relevant, and vice versa.

In the context of construction project, several scholars added other important attributes above the mentioned ones (power, legitimacy and urgency) to enhance the value of stakeholder identification such as: (1) Proximity (Bourne, 2005) which implies the extent of the involvement from the stakeholder in the project; (2) Stakeholder attitude, that is referred to whether the stakeholder supports or opposes the project (McElroy and Mills, 2000); (3) Stakeholder knowledge, whereas the more knowledge a stakeholder has about the project, the more he/she is able to influence it (Nguyen et al. , 2009).

2.5.2 Stakeholder prioritization (Saliency)

Once stakeholders are identified a mechanism for prioritizing stakeholders is crucial to determine to whom and to what managers must actually pay attention and how much attention every stakeholder deserve (Grossi, 2003). The importance of a stakeholder will depend on the needs of the project activities and the extent to which the accomplishment of these activities dependent on that stakeholder, relative to other stakeholders, in meeting its needs. Therefore, at any given time, some stakeholders will be more important than others (Jawahar and McLaughlin, 2001).

Several researchers and institutions involved with the construction industry (e.g. Olander,2007; Bourn, 2005; PMI, 2013) have provided various methods to facilitate the prioritization process of the project stakeholders. PMI (2013) suggested three of ways depending on stakeholder attributes of power, interest, Influence and impact. By classifying and grouping the stakeholder to the appropriate quarter in three different grids as stated in the following points:

- i. Power/interest grid, grouping the stakeholders depending on their level of authority (“power”) and their level or concern (“interest”) regarding the project outcomes.
- ii. Power/influence grid, grouping the stakeholders based on their level of authority (“power”) and their active involvement (“influence”) in the project.
- iii. Influence/impact grid, grouping the stakeholders based on their active involvement (“influence”) in the project and their ability to effect changes to the project’s planning or execution (“impact”).

After the identification of each stakeholder attributes and grouping theme by the right place in the grid based on the intensity of this attributes (high or low), the project management team will take the appropriate attitudes towards each stakeholder among four possible attitudes (Monitor, keep informed, keep satisfied and manage closely) as shown in Figure 3 which provide an example of this classification by putting every stakeholder (A, B, C...G) in the write group.

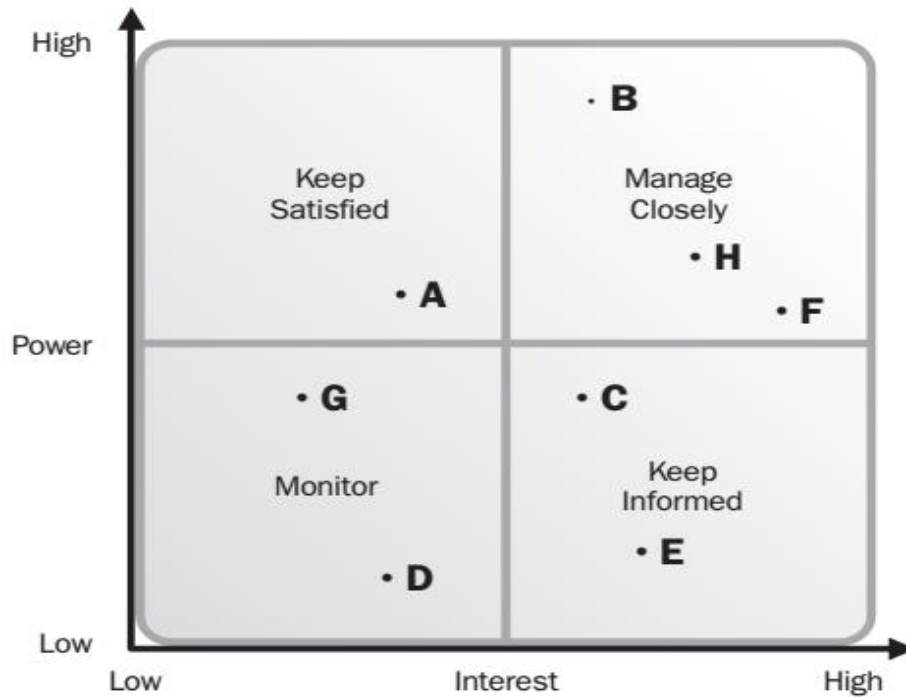


Figure 3: Example Power/Interest Grid with Stakeholders (adapted from PMI, 2013).

Although the classification methods based on the matrix of power and other attributes widely used in the medium and small construction project, still the salience model proposed by Mitchell et al. (1997) more appropriate for large and complex undertakings. As mentioned in the identification process the primarily stage of the salience model is to identify the key stakeholder based on their attributes of power, legitimacy and urgency. From this definition Mitchell et al. (1997) state the following seven stakeholder classes that are dependent on the possession of one or more of stakeholder attributes (Nguyen et al., 2009). Moreover, Figure 4 shows a framework of the interaction between these attributes and the corresponding class of stakeholder salience.

- 1) Dormant stakeholders own power to enforce their will, but do not have any legitimate relationship or urgent claim. Their power remains unused.

- 2) Discretionary stakeholders possess legitimacy attributes, but they have no power or urgent claim. There is no absolute pressure for managers to engage in an active relationship, although they may choose to do so.
- 3) Demanding stakeholders have an urgent claim, nonetheless have no power or legitimate relationship. This is bothersome, but does not warrant more than low management attention.
- 4) Dominant stakeholders are both powerful and legitimate. It seems clear that the expectations of any stakeholders perceived by managers to have power and legitimacy will matter.
- 5) Dangerous stakeholders have a lack of legitimacy, but possess power and urgency. They will be coercive and possibly violent, making the stakeholder 'dangerous'.
- 6) Dependent stakeholders have urgent and legitimate claims, but possess no power. These stakeholders depend upon others for the power necessary to carry out their will.
- 7) Definitive stakeholders are those that possess both power and legitimacy. They will already be members of an organization's dominant coalition. When such a stakeholder's claim is urgent, managers have a clear and immediate mandate to attend to and give priority to that claim.

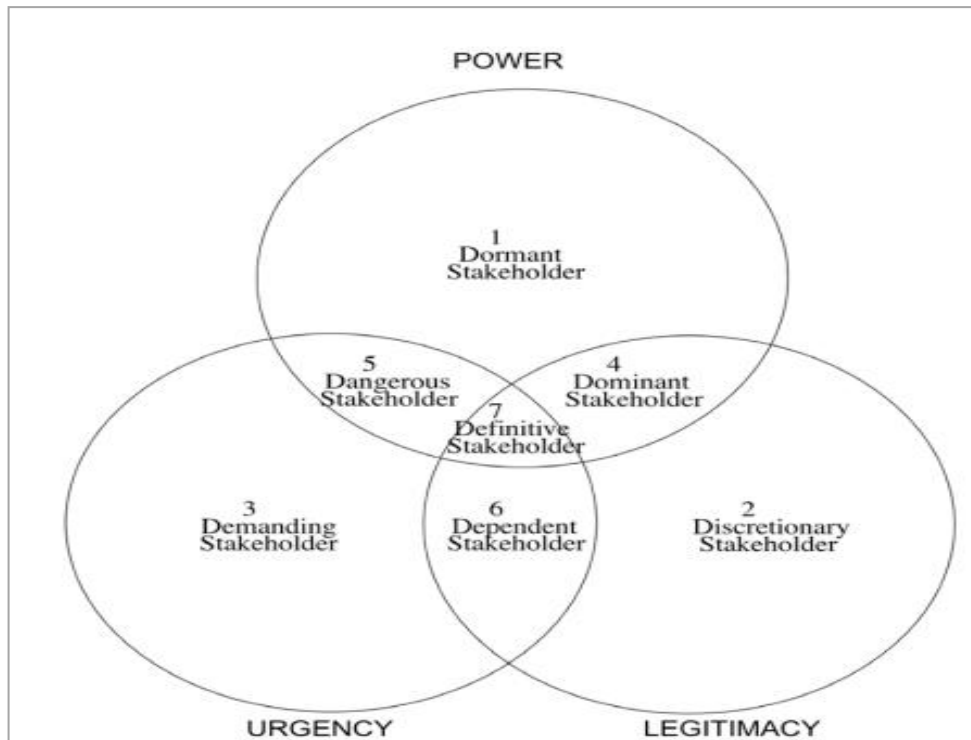


Figure 4: Stakeholder identification and salience framework (adapted from Mitchell et al., 1997)

Several researchers continue the work on the same concept of salience model developed by Mitchell et al. (1997) and proposed other similar approaches in the stakeholder prioritization that could be applicable for construction project's needs. For instance, Kochan and Rubinstein (2000) suggest that salience or the level of stakeholder influence on the project as a function of (1) the number or quantity of valued resources contributed by potential stakeholders, (2) the level of risk and failure costs associated with the relationship between stakeholders and the project activities, and (3) the power they have or exert in or over the project.

Another classification model considers stakeholder attitude towards a project by distinguishing whether a stakeholder is an advocate or adversary of the project in five levels of "active opposition", "passive opposition", "not committed", "passive support" and "active support" (McElroy and Mills, 2000). These approaches are

suitable in determining the direction of stakeholder impact on project decision making in construction undertakings (Olander, 2007).

2.5.3 Assessment methods of stakeholder salience

Having described the theory behind stakeholder definition, identification, and salience in construction undertakings, we still need to make a description of the issue of stakeholder salience assessment. Although the process of prioritising the stakeholder according to their attributes could be helpful for the project manager to give priority to competing project stakeholder claims, it may not be beneficial enough if the managers did not classify the salience levels of the stakeholder to different suitable actions should take towards each stakeholder to ensure a healthy relationship in the engagement stage.

To fulfil this aim, several scholars provide different classification for the types of actions and relationships that should the managers take into account in order to effectively engage their stakeholders. Aapaoja & Haapasalo (2014) stated that the stakeholder identification and the assessment of their salience is not enough to create a healthy relationship among project stakeholder, managers also need to assess stakeholders' probability to act and express their interest in project decisions. Johnson and Scholes (1999) have done the first attempt to fill this gap by creating the impact/probability matrix, where the project stakeholders are categorized depending on their level of impact and probability of impact on the project (Figure 5). The matrix is used to analyse the following questions:

- How interested (probability to impact) is each stakeholder group in stating their interest, expectations, or contributions to the project?
- Do they have enough leverage (level of impact) to do so?

Whereas Olander (2007) improve this matrix to fit the need of construction projects stakeholders, by identifying the four quadrants stakeholder's positions as follow:

1. The “key players” who are usually those with responsibilities for the project.
2. The “keep informed” stakeholders which contains different interest groups, such as local residents, organizations with low impact or non-governmental organizations.
3. The “keep satisfied” stakeholders who are often national governments, authorities or other similar organizations that have requirements and even the power to stop the project, but do not usually have a personal interest in it.
4. “Minimal effort” stakeholders does not mean ignoring them; however, the project management does not regard them as salient and focal. In addition, these stakeholders can try to gain salience through other stakeholders if they have some requirements of the project.

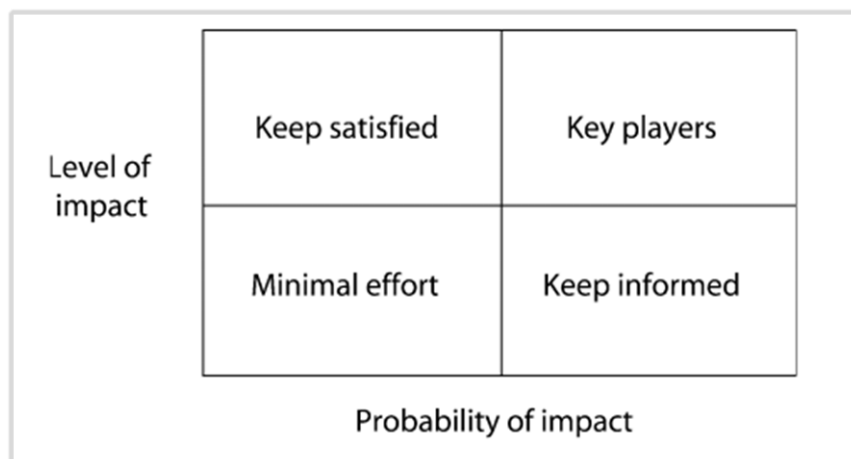


Figure 5: The stakeholder impact/probability-matrix (Olander, 2007).

Aapaoja & Haapasalo, (2014) have made a combination among the mentioned methods (Mitchel et al. 1997; Johnson and Scholes, 1999; and Olander, 2007) in order to increase the effectiveness in the assessment of stakeholder salience. They

stated that the assessment can be more useful for the managers by using the matrix shown in Figure 6. This matrix present the changing of level of impact (in Olander, 2007 matrix) to salience (Y-axis) because the more salient the stakeholder is, the higher the level of impact. Therefore, these two concepts can be considered parallel. The Y-axis describes the stakeholder groups in order of importance and the X-axis describes stakeholder’s probability to impact/ability to contribute to the project.

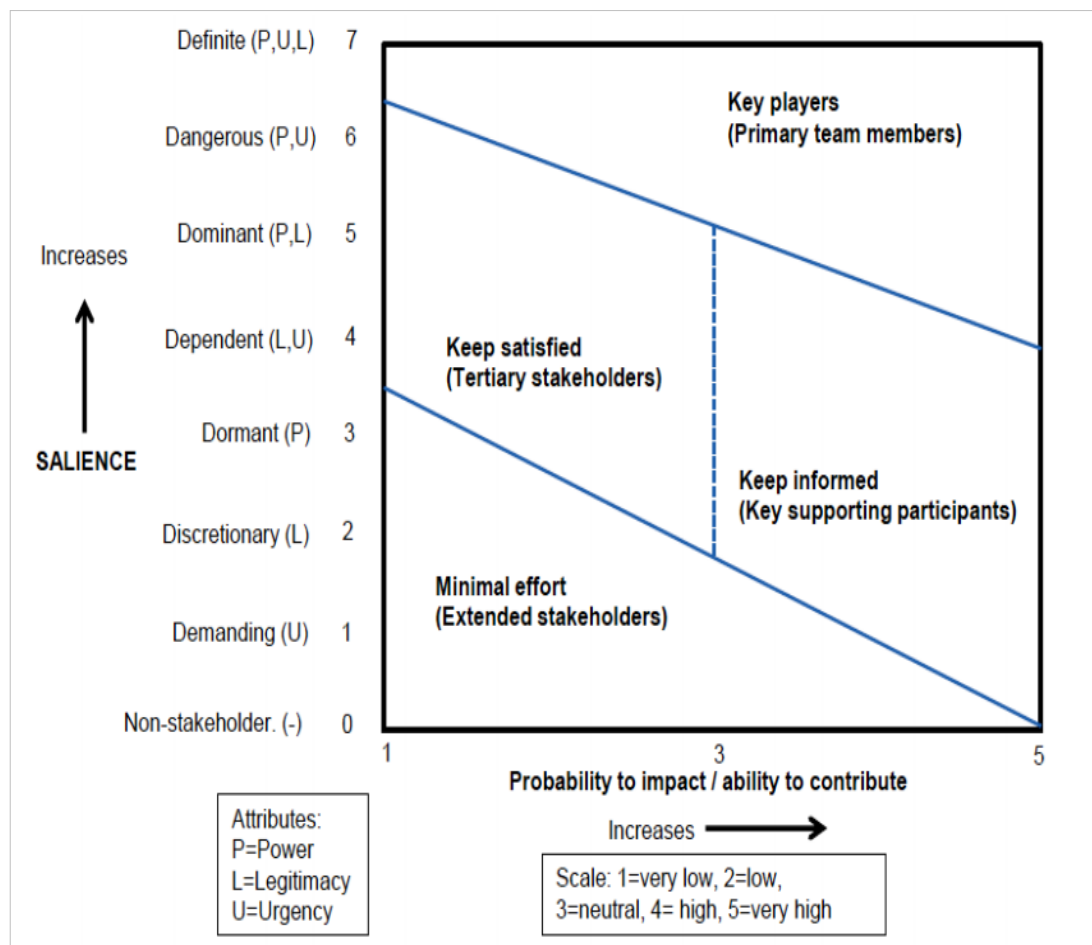


Figure 6: Stakeholder assessment matrix (adapted from Aapaoja et al. 2014)

Compared with Olander’s (2007) matrix, (Aapaoja et al., 2014) has changed the order of stakeholder positions to improve the reflection of stakeholder salience. They stated that a stakeholder cannot be a “key player” if it does not have at least two attributes. Due to the high salience, “key players” can be also regarded as “primary

team members” of the project. The variance between “keep satisfied” and “keep informed” is volatile, but usually the probability that “keep informed” has impact or contribute to a project’s outcome is higher than “keep satisfied”. Thus “keep informed” are more similar to “key supporting participants” and “keep satisfied” like “tertiary stakeholders” who usually have no personal interest on the project. Furthermore, the stakeholder possessing one attribute can be considered “minimal effort” or “extended stakeholders”.

Although the approach of salience assessment matrix provided by Aapaoja et al. (2014) presents a beneficial addition in terms of classifying the stakeholders based on their level of salience and their probability to impact, it still needs a practical steps to evaluate each axis (Salience and probability to impact) to facilitate to the managers the implementation of this matrix in the construction projects. In the next Chapter building on this work and by adding other methodology to assess the matrix axes, in order to fit the needs of this study and to increase the effectiveness of this matrix are presented.

Chapter 3

RESEARCH METHODOLOGY

3.1 Introduction

The intent of this chapter is to provide a clarifications for the data, methods and approaches that has been used to obtain the results of this study.

Initially, a review of the collected data for this research has been applied in this chapter, which contains a primary and a secondary sources. Then an explanation of the questionnaire design, discussion for its reliability as a research instrument, and a declaration for the ways that has been used to collect the survey responses has been provided.

More importantly, this section explains the suggested framework model for analysing the stakeholders in any construction industry which used as a methodology of this research. The purpose of providing such a framework is to clarify the sequence of the stages that has followed to obtain the results of this study, and to facilitate to the further studies enhance this methodology. In addition, a discussion of the processes, methods and equations that has been used in each phase of three main phases of this methodology (stakeholder identification, prioritization, and assessment matrix positioning phase) has been provided.

3.2 Sources of data

In order to clarify the methodology of the study, it is important to reveal the sources being adopted, which allows comprehensive discussions of different perspectives relating to the focus of literature subject (Naoum, 2012). Hence, this section describes the main sources that has been used as a base of analysis the stakeholder in LCI.

3.2.1 Primary source

In this research a questionnaire survey has considered as the main source of the data, in addition to interviews and phone interaction with a number of researchers and industry professionals. The questionnaire has been distributed for relevant respondents by using both the internet Google Forms and hand by hand papers copies to reach the appropriate number of respondents. Moreover, the questionnaire was designed to be simple and clear to read and understand by translating it to Arabic language the main language in Libya. In addition, a brief introduction about the concept of stakeholders and their attributes has included in the survey in order to facilitate the process of the participation from the respondents.

3.2.2 Secondary source

A comprehensive literature review was undertaken on topics related to construction stakeholders in order to have a sound knowledge of the topic. Research journals, academic thesis and conference papers were the main sources of the secondary data gathered. The secondary data helped in shaping out the structure of the research questionnaire.

An intensive literature review was undertaken on topics regarding the stakeholder analysis and management in order to understand in depth the different methods and

approaches that has been established from the previous studies. Data has been collected from various resources of construction stakeholder researches such as: academic thesis, dissertations and research papers; surveys; journal articles; books and conference papers.

Although a various sources of stakeholder studies from last decades were taken into consideration in this study, the researcher emphasis on the up-to-date relevant material to insure the accuracy of the research results. In addition, in order to develop a suitable approach for analysing the stakeholder in LCI, a multiple areas of stakeholder's studies has been covered by this research such as:

- ❖ Project stakeholder management.
- ❖ Construction stakeholder management.
- ❖ Business stakeholder analysis methods.
- ❖ Stakeholder theory.
- ❖ Stakeholder interests and influences.
- ❖ Stakeholder engagement.
- ❖ Stakeholder identification approaches.
- ❖ Stakeholder salience and attributes.
- ❖ Stakeholder mapping and visualization.

3.3 Questionnaire design

The key purpose of the questionnaire survey is to assess Libyan construction industry stakeholders and their salience attributes. Therefore, an identification process has been made before conducting the questionnaire by using an intensive literature review of the industry and conducting various interviews with Libyan researchers

and industry professionals, results an identification of 21 stakeholders. Based on the identified stakeholders the questionnaire has been designed using mainly closed-ended questions and has divided to the following four sections:

- Introduction and Background of the study.
- Respondent information part.
- Identification assessment section.
- Attributes assessment section.

The first section contains an introduction for the stakeholder concept in the construction industry, explanation of the objectives and the important of the research, and clarifying the participation process required from the respondents.

Whereas the respondent information part consists of seven (7) closed-ended questions. The intent of asking these question is to collect the background experience of the participants to exclude those who are not involved in the LCI. Moreover, these questions asked about the qualification level, the organization sector and their type of service are provide, the working position, years of experience and the number of projects these experience contains, and the final question was about the main type of the construction projects that organization has specialized in.

The third section focus on the assessment of the twenty on (21) identified stakeholders in LCI. The respondent has asked to choose the appropriate value from 0 to 10 for the question “To what extent do you think the following individual or organizations are stakeholders in the Libyan construction projects?” where the stakeholder has listed in a table to facilitate the assessment process.

Eventually, the attributes assessment section asked the respondents to evaluate three main attributes of the stakeholder (power, criticality and legitimacy) which we will use to identify the salience degree of each stakeholder to achieve the aim of this study. In order to increase the accuracy of the attributes evaluation, each attributes has divided to its factors based on previous studies (i.e. Bourne and Walker, 2005; Grossi, 2003; Mitchel et al. 1997) as the framework methodology will be explained in this Chapter. The factor corresponding to each attribute were as follow:

- Power factors:
 1. Coercive
 2. Utilitarian
 3. Symbolic

- Criticality factors:
 1. Urgency
 2. Importance

- Legitimacy factors:
 1. Pragmatic
 2. Strategic influence
 3. Position eligibility.

Consequently, each participant asked to put an appropriate evaluation from 0 to 10 based on a description for these levels to the eight (8) mentioned factors. Therefore an organized table has provided to each factor which include: the twenty one (21) identified stakeholders, description to each level from 0 to 10, and appropriate spaces to contain the respond (see Appendix A).

3.4 Reliability of Research Instrument

In order to ensure the validity of the questionnaire, it was designed in a simple and straight forward manner. By precise and clear translation of the stakeholder concept to the Arabic language which is the main language of the respondents, in addition to an explanation and clarification of the questionnaire objectives has included in the introduction to the survey, it was very easy to read and respond to. Furthermore, most of the respondents has chosen attentively from various famous and reliable Libyan construction firms (such as Bonyan Consulting Engineers) and research institutions (e.g. Tripoli University and Musrata University) to increase the reliability of the results.

3.5 Data collection

As previously declared, in order to reach to appropriate to relevant respondents in the Libyan construction industry, the questionnaire has been distributed and collected through hand by hand submission and by using Google Forms tool in the internet network. Out of seventy (70) invitation to complete the questionnaire sent, (51) were accepted and completed while only fifteen (15) copies of the survey were conducted by using Google Forms, and the other sixty three (36) were retrieved in person. The response rate was 73%, which was consistent with response rate of most questionnaire surveys in the construction industry (Akintoye, 2000; Yang & Shen, 2014).

3.6 Framework of the research methodology

This section describes the suggested framework for analysing the stakeholders in LCI. Figure 7 illustrates the model of this framework which contains three main

phases and several process in each phase. The phases are stakeholders' identification, prioritization and positioning in the assessment matrix. In addition, this section will explain in details the component processes of each phase in order to facilitate the implementation of this framework for any construction industry.

3.6.1 Identification phase

3.6.1.1 Analysis of the construction industry

In order to identify the stakeholder in any industry or system, the first step always is to collect the relevant information about that industry that will facilitate the process of gathering all involved stakeholder and understand their attributes and relationship towards different construction projects in this industry.

To achieve this aim, numerous studies from construction field researchers (Chinyio & Olomolaiye, 2010; Missonier & Loufrani-Fedida, 2014) has explored to identify key question that could provide the relevant information about the stakeholders in LCI . The identified questions are:

- What is the functional types of the construction projects in LCI?
- Is the majority of the construction projects are in public or private sector?
- What is the nature of the construction firms in LCI?
- What are the individuals, groups and organizations that could involve in the construction projects in LCI?
- Who is the stakeholders that gives the required permission or license to fulfil the objectives of every stage of the Libyan construction projects?

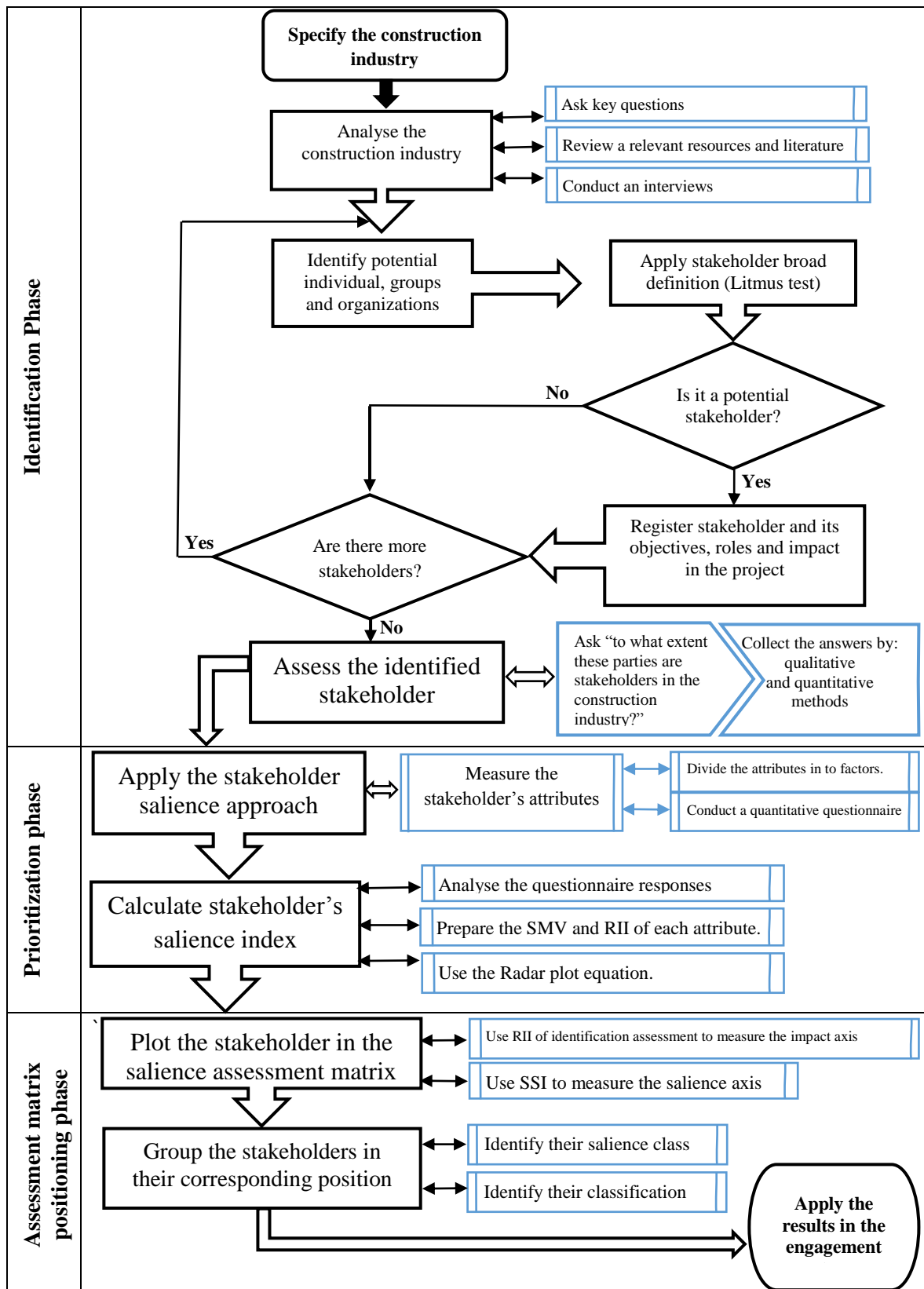


Figure 7: Framework model of stakeholder analysis in construction industry

To collect the answers of these questions, the researcher conducted some interviews with project managers and engineers have a wide experience in LCI in addition to deep study has been conducted about Libyan construction projects from the former researches (e.g. Gebril, 2012; Grifa, 2006; Omran, Bazeabaz, Gebril, & Wah, 2012; Sherif, 2010; Shibani, Ganjian, & Soetanto, 2010).

3.6.1.2 Identifying the potential stakeholders

The following step after the collection of relevant information about the nature of the construction industry in Libya, is to identify and list all involved individuals, groups or organizations in industry. This process has done by using the collected information from mentioned interviews in the previous process. Moreover, some stakeholders has listed based on the identification process of previous studies in the construction projects that is declared in the chapter 2 such as: PMI (2013), Walker (2003), Tuman (2006) and Lester, (2007).

In order to confirm that the listed individuals, groups or organizations are real stakeholders in the LCP, the researcher apply the stakeholder broad definition presented in Chapter 2:

“A stakeholder is any group, organizations or individuals who can impact or be impacted by the project work or its results, has contribution in the form of knowledge or support, or having ownership or interest in the project”.

Although this is a broad definition of what constitutes a stakeholder, it helps testing whether the groups identified in the previous step may affect or be affected by the project activities. Some scholars (Grossi, 2003) called this process (litmus test) which is a test of a single factor (as an attitude, event, or fact) is decisive (Webster's dictionary, 2014). If the group, organizations or individuals under consideration

passes this litmus test it will be a qualitative indication that a relationship with the construction project exists. Consequently, it should taking in to account in the analysis of the stakeholders.

3.6.1.3 Registration Process

If the litmus test results positive we have identified a potential stakeholder and consequently it should be registered as such together with the analysis of their classification, relationship type with the managers of the project, and roles or responsibilities towards the project. Table 6 illustrates an example of registration process of the stakeholders.

Table 6: Examples of stakeholders' registration process

class	Stakeholder	Objectives and roles	Impact in the project
Internal stakeholders	Public clients	Serve public interest in the project based on government' strategic objectives. Allocates funds to the project and Ensures that public funds will be used properly. Link between the project managers and the consultant.	Possess a critical attributes could support or oppose the project development.
	Consultant	Provide advices in special studies and surveys for design and construction development. Collaboration with the design team to develop design and cost control. Monitor work on site with regard to quality, cost and time.	His extent of experience plays a series role in the project and therefore he could accelerates or slows the development of the project.
External stakeholders	Representative of the Municipality	Confirm that the project abides by laws and regulations of the construction.	May cause a delay in some stages of the project due to the required approvals and licences.
	Urban Planning Authority	Ensures that the project will be in line with district planning (Urban,2015). Provide central geodatabase repository for relative stakeholders(ArcNews, 2006).	Changing in city planning may affect the project location and therefore its outcomes.

3.6.1.4 Identification assessment

To ensure the reliability of the identified LCI stakeholders, a questionnaire survey has been made targeting Libyan researchers and industry professionals. As shown in the Appendix A the survey includes four sections, the second one emphasizes on the identification assessment by asking the respondents to give appropriate evaluation

from 0 to 10 to each stakeholder through the question “To what extent do you think the following individual or organizations are stakeholders in the Libyan construction projects?”

The respondents’ answer for this question could give a respectable indication about the eligibility of the identified group to be a stakeholder in LCI. In addition, because of the different perspectives and experience of the participants regarding the construction projects in Libya, their evaluation will indicate the level of involvement that each stakeholder have in the LCI and more importantly their probability to impact or contribute in the construction projects, which made the results of this section beneficial in the salience assessment phase as can be seen in next Chapter.

3.6.2 Prioritization stage

Although the identified stakeholder of LCI could help the project managers of internal and external construction firms to consider the most influential individuals, group or organizations in their projects, still there is a need for a prioritization process that could help the project managers to give the proper attention for each stakeholder, according to their influence in the project. To achieve this aim, previous studies has provided a various methods and approaches to different discipline (e.g. business, Forest, lean enterprises and construction stakeholder management). Subsequently, we choose a combination of three famous methods (i.e. Mitchel et al. 1997; Grossi, 2003; Bourne and Walker, 2005) to fit the purpose of this research. These methods are based on the identification and evaluation of the most important attributes for the stakeholders that will increase their influence in the project.

3.6.2.1 Applying the stakeholder salience approach

As mentioned in Chapter 2, the salience model was originally created by Mitchel et al. (1997) and was built basically upon three stakeholder attributes (Power, legitimacy and urgency). Grossi, (2003) continue the development of this work by adding a methodology for this model that allows for effectively measuring these attributes. In addition, he has replaced the urgency feature to criticality (which contains both urgency and important). In this research building on that methodology by adding different process to evaluate the salience of stakeholder in LCI will be presented.

While Mitchel (1997) in his method of conducting the stakeholder salience depend only on the presence of the mentioned attributes, other researchers argue that it is the level of each attribute what actually defines stakeholder salience. It is important to consider the intensity of each attributes which will ultimately define the significance of the stakes at risk and consequently the relevance, salience, or importance of the stakeholder (Grossi, 2003). Consequently, it has been proposed a method to measure the stakeholder salience by a combination of the relative values allocated to each one of the attributes of power, legitimacy, and criticality.

The proposed method was based on the representation of the three variables power, legitimacy, and criticality in a radar-plot chart similar to the one depicted in Figure 8. The intensity of the values for each attributes has assigned in the range between zero and ten to facilitate the evaluation of the corresponding attribute axis in the chart. Logically, when the attribute value is greater, more importance that attribute has in defining stakeholder salience. For example, a power value of ten would specify that the stakeholder has maximum power to influence in the project, whereas a power

value of one would indicate a low ability to make his claims prosper in the project (Grossi, 2003).

It is fairly obvious by observing the radar plot of Figure 8 that the area of the triangle resulting from joining the vertices defined by the values of the attributes of power, legitimacy, and criticality is descriptive of stakeholder salience. A greater area would specify that the attributes' values are larger, which means that the stakeholder has more influence in the project activities and could make risk if his claims in the project does not achieved more than any other stakeholder with less of any or all of the attributes.

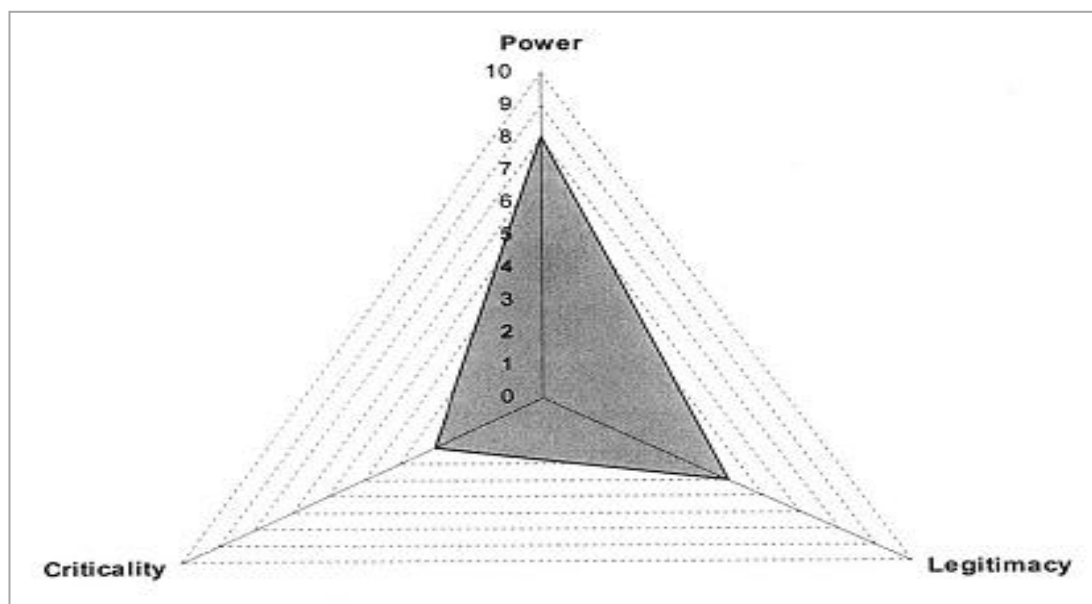


Figure 8: Radar plot of stakeholder attributes: Power, Legitimacy, and Criticality (adapted from Grossi, 2003)

Consistently with this description a stakeholder salience index (SSI) has been proposed in order to priorities the stakeholder in the construction projects depending on their attributes. The SSI is basically equal to the area of the triangle defined by the level of each of three attributes. This area can be calculated as follows:

$$SSI = \frac{\sqrt{3}}{4} (Power \times Legitimacy + Power \times Criticality + Legitimacy \times Criticality) \quad (\text{Eq.1})$$

The area of the triangle can be calculated as the sum of the areas of the three sub-triangles defined by each pair of attribute axes. Sub-triangles areas in turn can be calculated as half the value of one of the attributes defining the sub-triangle times the value of the other attribute times $\sin(60)$ or, equivalently, $\sqrt{3}/2$. Factoring common terms produces the equation presented (Grossi, 2003).

By defining the possible range of stakeholder's attributes as belonging to the interval (0,10), then a value of zero for all three attributes will be illustrative of a non-stakeholder on the other hand a value of 10 for all of the three attributes will be descriptive of a stakeholder with maximum salience. Compatibly, the minimum value that SSI can take will be 0 for non-stakeholders, whereas the maximum value will be 130, or more precisely $\frac{\sqrt{3}}{4} (10 \times 10 + 10 \times 10 + 10 \times 10)$.

3.6.2.2 Measuring the stakeholder's attributes

In order to apply the proposed stakeholder salience index matrix to priorities the identified stakeholders of LCI, a method is needed to assign values to each attribute of power, legitimacy, and criticality.

Accordingly, the researcher included an assessment process for the stakeholder attributes in the third section of the mentioned questionnaire of this study (see Appendix A). To make this assessment more precise, each attributes has been divided to its factors based on the definitions of these attributes presented by previous studies (Mitchel et al. 1997; Grossi, 2003; Bourne and Walker, 2005). Table

7, Table 8 and Table 9 present the factors corresponding to each attributes of power, legitimacy, and criticality. In addition, in order to facilitate the assessment process of each factor a guideline propositions has been provided also in theses tables to differentiate the value ranges. For each factor a numeric level is assigned based on the strength or intensity of these factors.

Table 7: Stakeholders' Power factors and their determination level (Grossi, 2003)

Power factors	The factor definition	Level of description	Level range
Coercive	extend of using threatening, force or violence behaviours by the stakeholder to obtain the desired outcomes in the project	His threatening position is null or very low	0-2
		He is using threatening argument	3-4
		He is able to pose real threats regarding his claims in the project	5-6
		He is capable of using some elements of force, violence and restraint	7-8
		He is Determined and totally capable of using force, violence, or any other restrain resource.	9-10
Utilitarian	The range of controlling the resources (material, financial, services, or information) used in the project by the stakeholder.	has null or very low control over the project resources	0-2
		has some control over some of the resources	3-4
		Has total control of the use of some resources	5-6
		The stakeholder heavily administers significant number of the resources	7-8
		The stakeholder extensively administers most of the resources	9-10
Symbolic	Extend of using normative symbols (prestige, esteem) or social symbols (love, friendship, and acceptance) to influence on the project work or its outcomes.	The stakeholder does not use or barely uses them.	0-2
		He uses some level of normative symbols or social symbols	3-4
		He uses moderate levels of normative symbols or social symbols	5-6
		He relies on normative symbols and/or social symbols to claim his stakes	7-8
		Extensively use normative symbols and social symbols to obtain his desired outcomes.	9-10

Table 8: Stakeholders' Legitimacy factors and their determination level (Grossi, 2003)

Legitimacy factors	The factor definition	Level of description	Level range
Pragmatic	Degree of the compatibility between the stakeholder's actions and the work ethics, laws and regulations related (E, L&R) to the project.	He has null or very low respect for the work (E, L&R).	0-2
		His actions shows low respect for the work (E, L&R)	3-4
		His actions shows acceptable respect to the work (E, L&R)	5-6
		His actions has high compatibility with work (E, L&R)	7-8
		His actions are very fair and shows a very good model in being sincere with work (E, L&R).	9-10
Strategic influence	the extent of long term effect of stakeholders' decision in the project work or its outcomes	His decisions has null or very low strategic effect.	0-2
		His decisions has low effect and does not require much attention.	3-4
		His decisions has moderate strategic influence	5-6
		The strategic effect of his decisions is very important	7-8
		The project success depend on the efficient of his strategic decision	9-10
Eligibility	Degree to which the legitimacy of the stakeholder is taken for granted without an explicit evaluative support.	He has null or very low right to be in his position.	0-2
		His selection has done without clear criteria.	3-4
		His selection has done with reasonable criteria	5-6
		He should be in his position	7-8
		He is the best choice to his position because of his efficiency and experience	9-10

Table 9: Stakeholders' Criticality factors and their determination level (Grossi, 2003)

Criticality factors	The factor definition	Level of description	Level range
Urgency	Refers to the amount of time offered by the stakeholder in order to obtain his requirement in the project.	He is time insensible or has very low demands for a timely response	0-2
		Asks for its stakes or values with enough anticipation (in a timely manner)	3-4
		Requires attention to its stakes in plausible or reasonable times	5-6
		Calls for a prompt attention to the stakes at risk in the project work.	7-8
		Demands immediate attention to his decisions or requirement.	9-10
Importance	The degree of the stakeholders' dependency that is put the project at risk.	The stakeholder has null or very low dependency	0-2
		Shows low dependency on the values obtained from the project.	3-4
		relies on the values obtained from the project for its future actions	5-6
		Shows high dependency on the stakes it contributes at risk in the project	7-8
		Demonstrates very high dependency on the stakes it puts the project or its outcomes at risk.	9-10

Ultimately, the level of each attributes (Power, Legitimacy, and Criticality) for every identified stakeholder will be obtained by conducting two stages of data analysing. The first stage is to obtain the mean value and relative important index for each factor (e.g. Coercive, Utilitarian and Symbolic) based on the analysis of the perceived values by the respondents of the questionnaire survey. In the second stage the average of the Statistical Mean Values (SMV) and relative important index (RII) for the number of factors corresponding to their attributes will be taken. The following equations (Eq. 4.2 and Eq. 4.3) illustrates the variables that has been used to calculate the Mean values and Relative Importance Index (RII).

$$SMV = \frac{\sum x}{N} \quad (\text{Eq. 2})$$

Where:

SMV : The statistical mean value;

$\sum x$: The summation of the total values perceived by respondents (i.e. each respondent will choose a value from 0 to 10, then a summation will be applied in all of these chosen value and;

N : The total number of values (or respondents).

$$RII = \frac{\sum w}{A \times N} (0 \leq RII \leq 1) \quad (\text{Eq. 3})$$

Where:

W : Weight given to each factor by the respondents and ranges from 0 to 10 similar to the summation of x in the Eq. 2;

A : The highest weight (i.e. 10 in this case) and;

N : The total number of values (or respondents).

Finally, the SSI based on the mentioned equation will be calculated by using the average of the mean values of each attributes. Similarly, the overall RII of the attributes will be also calculated by taking the average of all RII corresponding to each attributes. The use of this evaluation method of the attributes will ensure the reliability and the precision of the stakeholder salience indices, which will indicate the priority and the amount of influence that each stakeholder have in the LCI especially after ranking them based on the values of salience indices. Subsequently,

it will facilitate the process of the next phase of our methodology, by plotting each stakeholder in their proper place in the salience assessment matrix.

3.6.3 Assessment matrix positioning phase

As declared in Chapter 2, the identification of the project parties and the assessment of their salience not enough to engage the stakeholder effectively, the managers should have an approach to classify their stakeholders according to the salience level and assess their probability to impact in the project. Hence, several scholars has proposed various methods to achieve this aim (e.g. Onlander, 2007 and Aapaoja et al. 2014).

This section will propose another method that has been created by combination from previous methods especially the salience assessment matrix provided by Aapaoja et al. (2014). Moreover, the intent of this alteration in the former methods is to fit the results that has been obtained from the analysis of the survey (Stakeholder Salience Index and Relative important index) and to increase the effectiveness of the assessment process of the identified stakeholders.

3.6.3.1 Plot the stakeholders in the Salience Assessment matrix

Figure 9 depicts the salience assessment matrix that has been built by combined several previous methods to fit the purpose of this study. Moreover, the assessment method results from some additions and alterations has been made of the matrix proposed by Aapaoja et al. (2014) in order to increase the accuracy of the assessment process, and to facilitate the implementation of this matrix in the analysis of any industry depending on quantitative source of data.

As shown in figure 9, the Y-axis refers to degree of the stakeholder salience index (SSI), which starts from 0 to 130 based on the mentioned equation (Eq.1) of the Radar plot. In addition, the scale has been divided equally in to the seven salience classes mentioned in Chapter 2 (Mitchel et al. 1997) which will indicate the number

of important attributes that each stakeholder possess (power, legitimacy and criticality) which started with Non-stakeholder (zero in the scale of SSI) and finished with Definite stakeholders that possess all the attributes and therefore have the highest salience level (the range in the axis from 111.5 to 130).

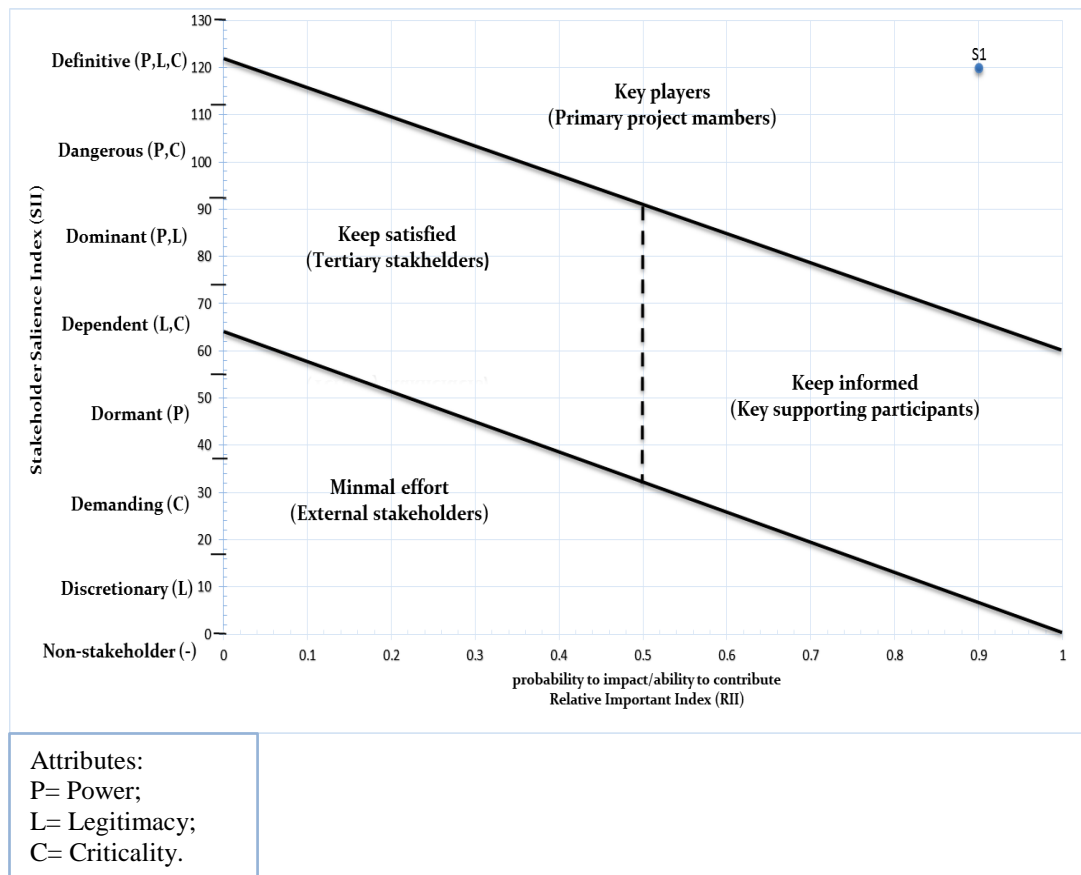


Figure 9: The adjusted stakeholder assessment matrix

On the other hand, the X-axis presents the scale of Relative Importance Index (RII) that has been obtained from the analysis of the third section (Identification assessment) of questionnaire survey which refers to the probability to impact/ability to contribute in the project. The scale range is from 0 to 1 as a result of Equation 4.3 which refers that the probability to impact/ ability to contribute will increase according to the value of RII. More importantly, it seems that the RII of the stakeholder identification assessment is the most suitable indication of their probability to impact or to contribute in the Libyan construction projects, because of

the strong relation between the impact and contribution of the stakeholder with the questions that has been asked to the respondents in the questionnaire survey “To what extent do you think the following individual or organizations are stakeholders in the Libyan construction projects?”

Logically, there is no doubt that the extend results of each identified part to be a potential stakeholder in LCI, that has obtained from various researchers and industry professionals will indicate their probability to impact or ability to contribute in this industry. The RII will decrease the percentage of error in the estimation process provided by respondents and will clarify the eligibility of each part to be a stakeholder in LCI.

Furthermore, by obtaining the results of SSI which stated in Y-axis, and the RII of the Identification assessment which presented in the X-axis, each stakeholder will be plotted in the right place in the assessment matrix. To make this process more precisely, the Scatter plot provided by Microsoft Excel Software will be used which will facilitate the identification of the proper relationship to each stakeholder that the managers should considered to obtain an effective engagement with the project parties.

Eventually, the matrix illustrates a four quadrants that has mentioned in details in Chapter 2, which indicate the position that each stakeholder will take in the project. Moreover, the same order of the original matrix (Aapaoja et al., 2014) is kept to improve the reflection of stakeholder salience. Figure 9 illustrates an example of plotting one of the stakeholders in the matrix which presented in the blue point (S1). It indicates that the stakeholder has SSI of 120 and RII of 0.9. Therefore the

stakeholder will take the key player position in the project, with definite class of salience which possess the three attributes (power, legitimacy and criticality). Accordingly, the classification of the stakeholder will be in the Primary team members of the project.

Chapter 4

DATA ANALYSIS AND RESULTS DISCUSSION

4.1 Introduction

This Chapter presents the results from applying the stakeholder analysis framework model described in Chapter 3 in LCI. The chapter begins with reviewing the questionnaire response rate, displaying, and interpreting the respondents' personal information.

Then, a discussion has been provided for the results of identifying LCI stakeholders in addition to the assessment outputs of this identification followed by an illustration for the prioritization of phase results, which contains the output of Stakeholder salience index SSI calculations based on the quantification of the power, legitimacy, and criticality attributes of the identified stakeholders. Eventually, this chapter presents the LCI stakeholder assessment matrix and explains the process of classifying and positioning these stakeholders based on the obtained results from the previous phases.

4.2 Questionnaire Response rate

As mentioned in Chapter 3, the questionnaire target the researchers and industry professionals who are involved in Libyan construction projects. As shown in Table 10, over a seventy (70) invitation to complete the survey from the respondents, fifty one (51) questionnaire has been completed and accepted. Moreover, prior the

analysis of the collected data from the respondents, the author has validated that the response rate of the questionnaire survey (which is 73%) consists with most questionnaire surveys in the construction industry researches (Akintoye, 2000; Yang & Shen, 2014).

Table 10: Questionnaire Response rate data.

Type of survey	Number of sent invitations	Response	Non-Response	Percentage of Response
Questionnaire	70	51	19	73 %

4.3 Respondents' profiles

This section presents general information about the respondents who completed the survey. The aim of this section is to provide background regarding the respondents' qualifications and experience in Libya construction projects, and consequently to indicate the degree of reliability of the data provided by them.

4.3.1 Educational Qualification

The respondent involved in the survey had achieved the different level of academic qualification as shown in Figure 10, where the majority of respondents (30 participants) have attained a bachelor level of study. Amongst remaining, 10 respondents are PhD holders and 7 respondents have finished a master degree. Eventually only 4 respondents have a diploma.

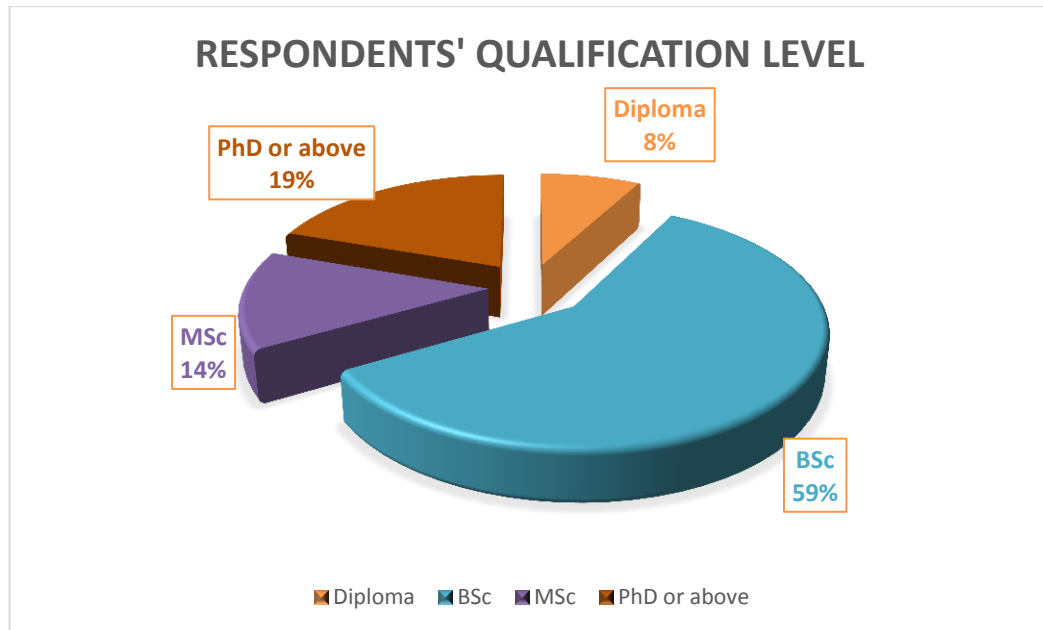


Figure 10: Percentage of participants by qualification level

4.3.2 Working position

Figure 11 indicates the working positions distribution of the questionnaire respondents in their respective organizations. It is quite obvious that the engineer position regardless of the spatiality of the engineering work (i.e. designers or supervision) were the highest number, with 22 participants (i.e. 43%), followed by both the project managers and academic researcher with the same number of participants 9 (18%). The next position were the contractors with 7 respondents (14%). Finally, the smallest numbers of respondents were consultants, with 4 participants (31.9%).

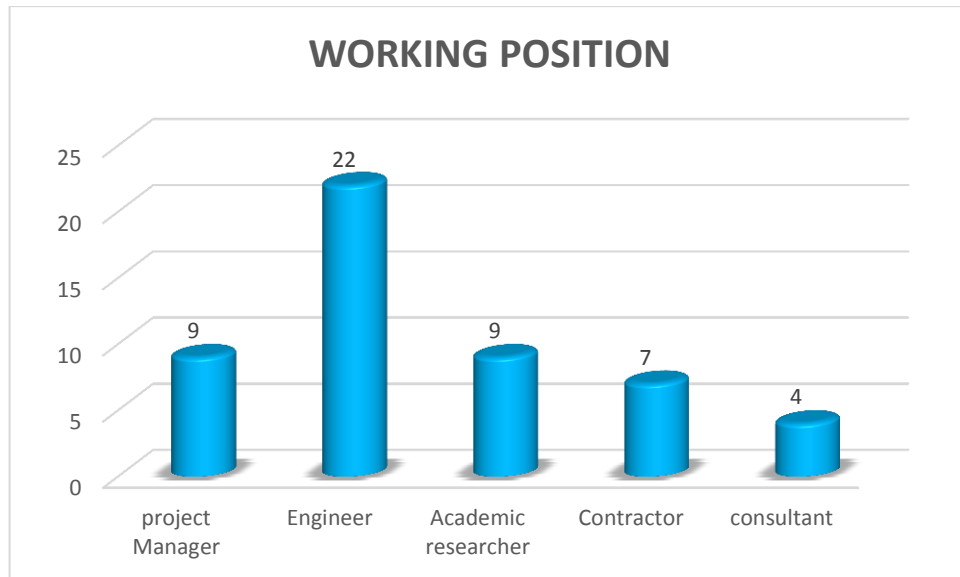


Figure 11: respondents' working position

4.3.3 Type of organisation

Respondents were asked to specify the type of organization at which they worked. As seen in Figure 12, the results of the survey shows that the vast majority of respondents (28 of 51) were working in the private sector whereas the rest of participants 23 are working in the public sector. This will add to the results of the survey different perspectives in analysing the stakeholder in LCI, and consequently will increase the reliability of the results.



Figure 12: Percentage of Ownership nature of respondents' organisations.

4.3.4 Type of business

Figure 13 indicates the percentage of organization's business type of who participated in this survey where each respondents was asked to select his organization business in the construction industry. It is notable from the Figure that the majority of the respondents (27 of 51) revealed their company as a construction firm. This followed by 16 participants considering their firm as a consultant company whereas the rest of participants working in designing and supervision companies with 5 and 3 respondents respectively.

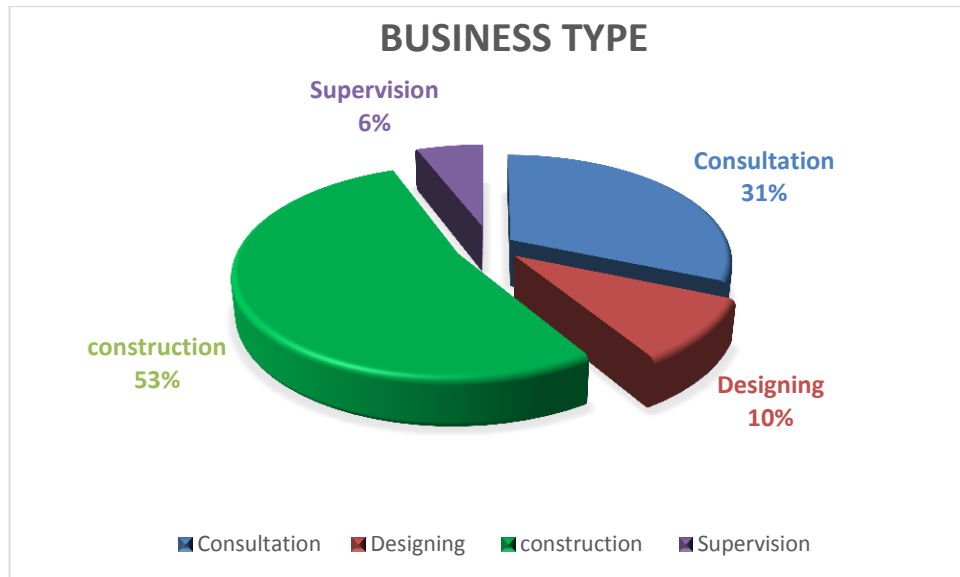


Figure 13: Types of business Percentage of participants' respective organization

4.3.5 Construction industry speciality

Figure 14 illustrates the different types of construction projects that respondents were involved in, grouped into major categories. The survey found that the majority of construction companies surveyed were working in residential building, with 18 specialists among the respondents. 16 worked in governmental building, 9 in commercial building, and the rest of participants worked in infrastructure projects. The responses of different types of building specialists will increase the reliability of the salience attributes evaluation of each stakeholder in the construction industry, due to the different projects nature that the same stakeholder may involve in.

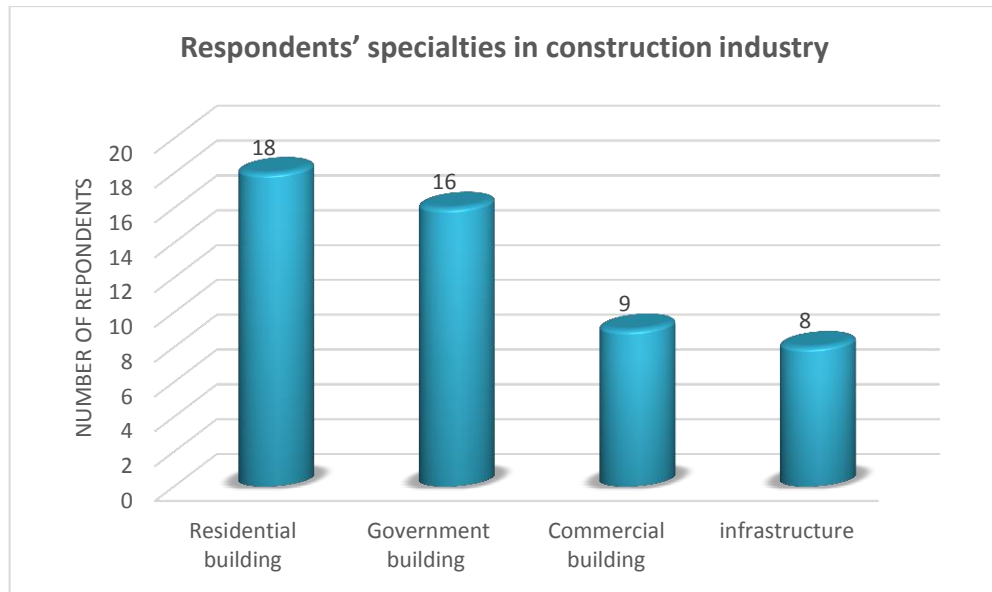


Figure 14: Respondents' specialties in building construction

4.3.6 Experience in Libyan construction industry

Figure 15 illustrates the respondents' years of experience in the construction industry of Libya, grouped into different categories. It shows that the highest number of participants have from 1 to 5 years of experience (24) which will have a slight negative influence in the accuracy of the results. However, it is expected that the other respondents who have more than 6 years of experience will moderate the accuracy of the questionnaire results especially because 30% of the total number of the participants have more than 10 years of experience in LCI.

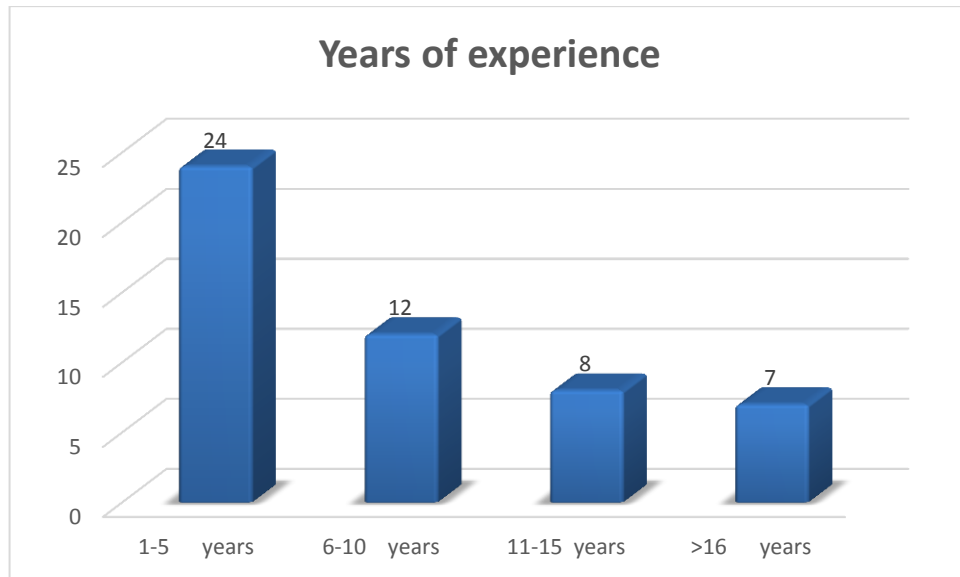


Figure 15: Respondents' years of experience in Libyan construction industry

4.3.7 Number of experience projects in LCI

From the survey, by asking each respondents “how many projects that your experience contained?” it was found that 25 (49%) of the participants their experience included 1-4 projects, followed by 10 respondents indicated that they have an experience of 9-12 projects. Whereas 7 participants have from 5-8 projects and the rest of the respondents (9) revealed that they have experience with 13-16 projects and more than 20 projects, as seen in Figure 16.

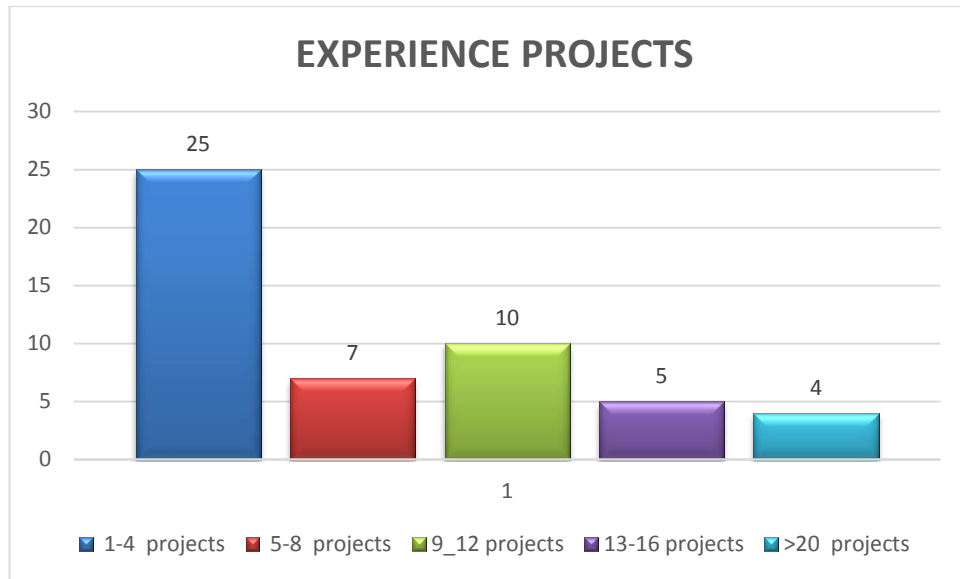


Figure 16: Respondents' Number of experience projects in LCI

4.4 Stakeholder identification of LCI

This section discusses the results from the identification phase of research framework model. In order to identify the stakeholder of LCI the starting point was analysing the construction industry by gathering the relevant information about the types and nature of projects and the construction firms in Libya. Based on these information, the researcher has identified the potential stakeholders that is involved with LCP, and applied the other related processes that has declared in details in Chapter 3.

Table 11 illustrates the twenty one (21) registered stakeholder of LCI based on the identification process. It shows that the stakeholder has been classified into internal and external stakeholders. Similar to any construction project in any country the internal stakeholders contain all primary key players in the project such as: clients, consultant, contractors, and project end users. It also includes the project key participants stakeholders such as: engineers, subcontractors, owner financial support, project management office and suppliers.

On the other hand, the identified external stakeholders differ in comparing with other countries industry, due to the difference of regimes and ministries. The external stakeholders in Libya consists of government parties and other extended stakeholders that may have an impact in the construction projects. The governmental stakeholders contain the involved authorities in the construction projects that responsible of applying laws and regulations in the industry such as: Municipality, Public projects authority, Urban Planning Authority and the Authority of survey and roads. Moreover, the governmental parties also included the related ministries to the industry such as Ministry of Housing and Utilities that may set a constraints for project execution or requires permissions and license in some project activities.

In addition of the governmental parties, the external stakeholders contained the minimal effort parties. Stakeholders that have a minimal impact on the project with no direct control over the project resources, but they may have an interest in the project. These parties are similar to Competitors, Local residents and neighbours, Engineers and workers unions and media.

Furthermore, the Table 11 shows also the corresponding objectives and roles to each identified stakeholder in addition to its impact in the project. The provided information of each stakeholder clarify the relations between the stakeholders and the construction projects and provide the logic that causing these parties to be a stakeholders in LCI.

Table 11: Registration of identified LCI stakeholders with corresponding Statistical mean value and Relative important index of identification assessment.

registration of identified stakeholder					Stakeholder Identification assessment		
Class	Stakeholder	ID	Objectives and roles	Impact in the project	SMV	RII	Rank
Internal stakeholders	Private clients	S01	<ul style="list-style-type: none"> ▪ Ensure the project is completed successfully in terms of quality, time and cost. ▪ Link between project managers and consultant. ▪ Provide financial support; maximize return with minimized risk. 	Have the highest power to support or kill the project.	8.62	0.86	1
	Public clients	S02	<ul style="list-style-type: none"> ▪ Serve public interest in the project based on government' strategic objectives. ▪ Allocates funds to the project and Ensures that public funds will be used properly. ▪ Link between the project managers and the consultant. 	Possess a critical attributes could support or oppose the project development.	8.23	0.82	3
	Consultant	S03	<ul style="list-style-type: none"> ▪ Provide advices in special studies and surveys for design and construction development. ▪ Collaboration with the design team to develop design and cost control. ▪ Monitor work on site with regard to quality, cost and time. 	May accelerates or slows the development of the project based on his experience extent.	8.03	0.8	4
	Project end users	S04	<ul style="list-style-type: none"> ▪ Ensure that the constructed work in the project fit to the final use, and will be in line with their expectations. 	May oppose the project and make series conflicts if the work not match their expectation, or by changing their requirement.	7.84	0.78	5
	Design engineers	S05	<ul style="list-style-type: none"> ▪ Develops the design of the project and produces drawings and specification. ▪ Ensures that the drawings applicable to implement. 	the level of the design complexity will influence the almost all sides of project work (e.g. cost, quality and time)	7.64	0.76	6

External stakeholders	Supervision engineers	S06	<ul style="list-style-type: none"> ▪ Ensure that the constructed work compatible with the defined specifications. ▪ Reports to the managers the project progress. ▪ Solve site conflicts and assesses the legitimacy of claims. 	They have the ability to accelerate or slows the work in the project based on their efficiency of meeting project requirement.	7.25	0.72	7
	Main Contractor	S07	<ul style="list-style-type: none"> ▪ Carries out and completes the work designed by consultants to meet time, cost and quality objectives; ▪ Supervises and manages operations on site. ▪ Coordinates and supervises all sub-contract work, materials and suppliers. 	Has a high impaction in the projects delivery in terms of meeting the specified time, cost and quality. May ask for Cost escalation and cause a series conflicts.	8.25	0.82	2
	Subcontractors	S08	<ul style="list-style-type: none"> ▪ Carry out and complete the work assigned by main contractors. 	May delay the project delivery by missing the project schedule or required quality of the work.	7.16	0.71	8
	Owner financial supports.	S09	<ul style="list-style-type: none"> ▪ Support the owner and assist the project fund (e.g. bank agents, shareholders) 	They usually has no requirements or personal interest on the project.	7.16	0.71	9
	Project management office	S10	<ul style="list-style-type: none"> ▪ Assist in preparing project schedule. ▪ Provide advices and expertise regarding the management of project. 	May cause a Delay in management approval.	6.87	0.68	10
	Fresh Concrete suppliers	S11	<ul style="list-style-type: none"> ▪ Supply the fresh concrete in the specified time to the project. ▪ Ensure the quality of provided concrete. 	They could negatively impact in the project by delaying delivery or provide a low quality concrete.	4.52	0.45	15
	suppliers	S12	<ul style="list-style-type: none"> ▪ Supply, install and commission the hardware that constitutes the finished building (e.g. materials suppliers, manufacturers and equipment suppliers). 	Their impaction limited with the provided materials or equipment in terms of its suitability to the work.	4.73	0.47	14

External stakeholders	Representative of the Municipality	S13	<ul style="list-style-type: none"> Confirm that the project abides by laws and regulations of the city. 	Causing a Delay of project required approval.	5.13	0.51	13
	Ministry of Housing and Utilities	S14	<ul style="list-style-type: none"> Ensure that the project serve the community development. Support the housing investment. Defines the project's purpose and the customers' constraints. 	May set constraints for the project execution of the following: supervision of construction, planning division, fire authority, and health authority.	4.44	0.44	16
	Public projects authority	S15	<ul style="list-style-type: none"> Provide a coordination between different projects and assist in solving the projects development issues. Ensure that the project will support the government strategy. 	May set constraints in some project issues, especially if the project conflict with their strategy.	4.34	0.43	17
	Urban Planning Authority	S16	<ul style="list-style-type: none"> Ensures the project will be in line with district planning (Urban,2015). Provide central geodatabase repository for relative stakeholders(ArcNews, 2006). 	Changing in city planning may affect the project place and outcomes.	5.25	0.52	18
	Authority of survey and roads.	S17	<ul style="list-style-type: none"> Ensure that the survey and roads' laws and regulations will be reflected in the project. Provide the required Cadastral and Geographic information. 	May set constraints in some project issues.	5.55	0.55	11
	The construction competitors companies	S18	<ul style="list-style-type: none"> Seek to gain competitive advantage. 	May create some issues could slows the project development.	4.36	0.43	17
	Local residents and neighbors	S19	<ul style="list-style-type: none"> Own land and houses near the project location. Ensure that their interests will not be hurt by the project activities. 	May express some requirements or protests about the project, and in some cases they may Filed a lawsuit if the project development hurt their interests.	4.36	0.43	18

External stakeholders	Engineers and workers unions	S20	<ul style="list-style-type: none"> ▪ Influences the conduct of its members (privilege protection function) 	Has a relation with Libyan workers and engineers and could support the project by providing a required information about them,	3.87	0.38	20
	Media	S21	<ul style="list-style-type: none"> ▪ Provide advertisements and clarifications of project purposes for community. 	Influence the project and companies reputations.	2.87	0.28	21

4.4.1 Stakeholder identification assessment

In addition of displaying the identified stakeholders and their corresponding objectives, roles and impact in LCP, Table 12 also shows the identification assessment of these stakeholders. This assessment consists of statistical mean value (SMV) and Relative important index (RII), which are results of analysing the responses of the third section of the questionnaire survey (see Appendix A), and reflects the extent of being a stakeholder in LCI. Furthermore, based on the values of SMV and RII each stakeholder has given the corresponding rank.

As mentioned in Chapter 3, the values of RII will reflect the degree of the ability to impact or contribute in the project from stakeholder in the salience assessment matrix as it will be seen at the end of this chapter. Therefore a maximum value of 0.86 and minimum of 0.28 will indicate a different impaction levels in the construction industry from different stakeholders. Consequently, the stakeholders will have various positons and classifications in the assessment matrix.

As it is foreseeable, the highest values of RII in the Table were to the internal stakeholders comparing with external stakeholders that have the lowest. However, it is quite obvious that the main contractor has the same RII of 0.82 with public clients which indicates the equality of the impaction in the project. Whereas the project end

users have higher RII comparing with the design and supervision engineers. Furthermore, RII of the contractors exceeds the RII of subcontractors with 0.11 which indicates a different in the level of impact in the project as what has been expected.

On the other hand, the difference between government stakeholders RII does not exceed 0.71, which indicates a convergent impact from these parties in the construction projects. It also increases the reliability of considering these parties as LCI stakeholders.

Furthermore, the lowest RII stakeholders included as expected the parties that have a slight impact and low contribution in the construction industry such as: Media, Engineers and workers unions and competitors. However, it was interesting and not expecting to realise that the Public projects authority has a small RII (4.34) which indicates insignificant contribution of this stakeholder in LCI.

Eventually, in order to provide a clear picture of the order of each stakeholder according to its SMV and RII, Figure 17 illustrates the ascending order of the identified stakeholders that existed in Table 11, and provides more facilitation in the comparison between different stakeholders.

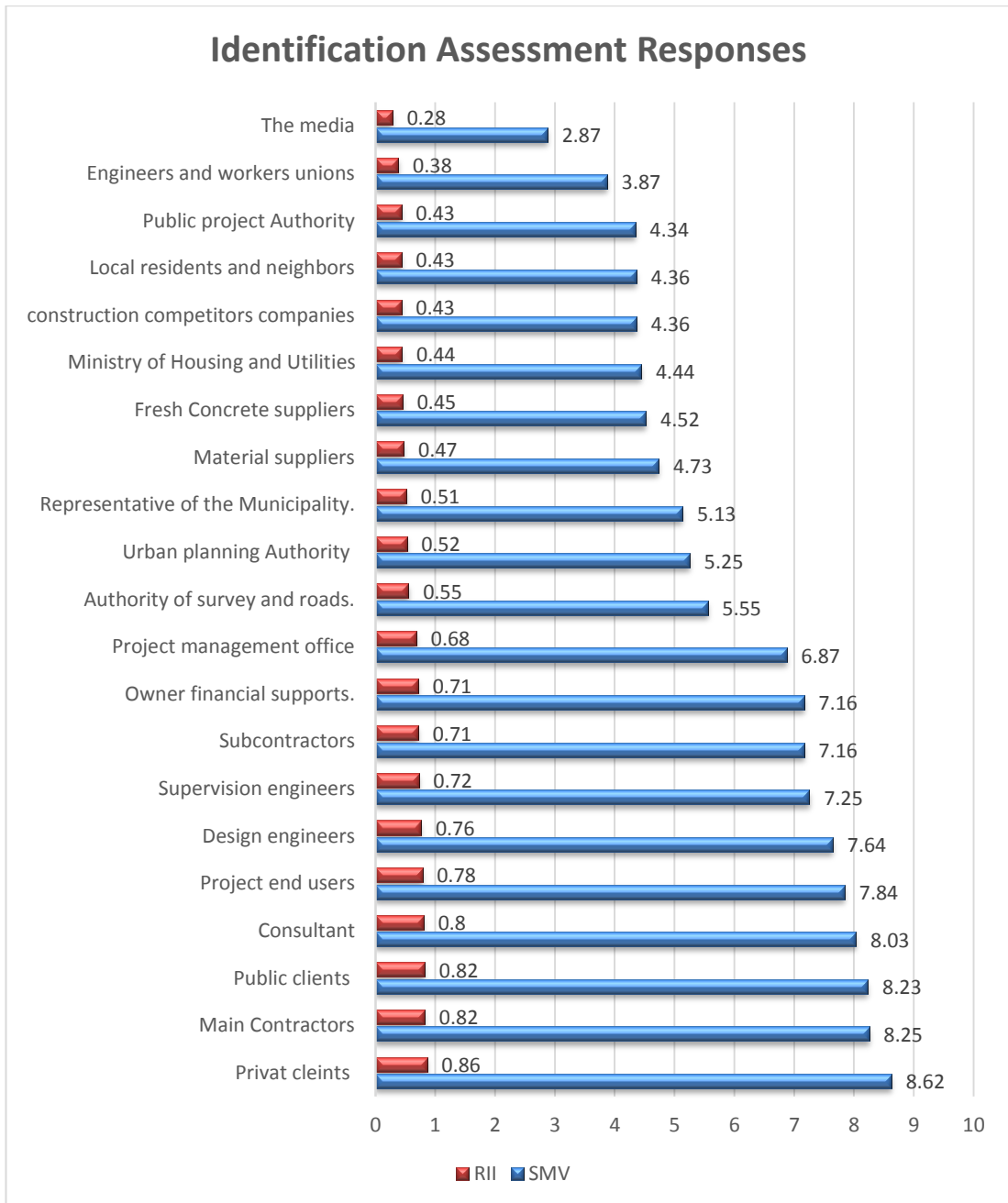


Figure 17: Results of LCI stakeholder identification assessment consists of Statistical mean value SMV and corresponding relative important index RII.

4.5 Prioritization for the Identified stakeholders in LCI

This section illustrates and discusses the results of conducting the salience approach to prioritise the identified LCI stakeholders. The results consists of Table 12, Table 13 and Figure 18 and it were based on the application of the described methodology in Chapter 3. It is aimed to calculate the Stakeholder salience index SSI with based on the quantification of the power, legitimacy, and criticality attributes of each one of the stakeholders. This quantification of the attributes represented in the Eq. 4.2 and the values of the attributes have been evaluated by the respondents of the questionnaire survey that has been conducted in this study.

Table 12 illustrates the SMV and RII corresponding to each factors of the mentioned attributes. As previously declared, the aim of dividing the attributes of power, legitimacy, and criticality to their relevant factors is to increase the evaluation accuracy of the attributes and gain more reliable results. This aim has been achieved by taking the average of the factors of each attributes instead of asking the respondents to directly evaluate the main attributes. Furthermore, the results of this table will be beneficial in the process of discussing the output SSI of each stakeholder, and it will provide a detailed justification of the values of SSI.

Table 13 illustrates the average of the SMV and RII of each attributes' factors. And more importantly, it provides the overall average of RII to the corresponding SSI, which results from the quantification of the SMV of power, legitimacy, and criticality attributes of each stakeholder. In addition, the table provides in the last column the corresponding rank of each stakeholder according to the values of SSI,

starting with highest value which for the Private clients with SII of 110.2 and ending with the SSI of 5.9 which is for Media.

Furthermore, Figure 18 depicts the results of the SSI provided in Table 13 but in ascending order of the stakeholders according to their SSI. The chart gives extra clarification of the salience of each stakeholder and facilitate the comparison between the results of this study and other previous researches in different construction industry.

The quantification of the salience of each stakeholder using the stakeholder salience index shows interesting and rational results. It is quite obvious that among the internal stakeholders, the private clients appears as the most salience stakeholder in LCI (SSI = 110.2). This comes as no surprise because of the significant attributes that they possess which allow him to kill the project at any time, comparing with public clients that possess lower authority because of the complexity nature of the public projects, and therefore their SSI was 92.5. Following these stakeholders in highest salience parties, the main contractor and supervision engineers with SSI of 83.2 and 81.3 respectively. Whereas the design engineers has lower SSI comparing with the supervision engineers with difference of 13.8, due to the proximity attribute that the supervision engineers possess that made their decisions more significant than the other engineers. Meanwhile, the results also show that the other internal stakeholders such as consultant, project management office, project end users and subcontractors have a Convergent salience and their SSI ranges from 51.9 to 56.8. Whereas the suppliers and the owner financial support have the least salience among the internal stakeholder due to their attributes that cannot make a significant influence in the project.

On the other hand, the external stakeholders as it is foreseeable have generally lower salience in LCI comparing with the internal parties of the project. The most salience stakeholder in this category was the Ministry of housing and utilities with SSI equal to 49, which is reasonable due to the significant impact that the laws and regulations have in public and private projects in Libya. Follow this party the representative of the Municipality with SSI equal to 31.5, whereas the Urban planning authority, Public projects authority and the authority of survey and roads, have a Convergent SSI of 26.8, 25.5 and 24.6 respectively. Eventually, the least salience stakeholders included those parties that have a minimum involvement and contribution in the construction projects, and represented in the local resident and neighbours, competitors, engineers and workers unions and Media.

Table 12: Statistical mean value and relative important index of LCI stakeholders' attributes factor

classification	Stakeholder	ID	Power Attribute						Legitimacy attributes						Criticality Attribute			
			Coercive		Utilitarian		Symbolic		Pragmatic		Strategic influence		Position eligibility		Urgency		Important	
			MV	RI	MV	RI	MV	RI	MV	RI	MV	RI	MV	RI	MV	RI	MV	RI
Internal stakeholders	Private clients	S01	9.1	0.87	9.84	0.92	9.2	0.88	9.39	0.91	8.7	0.84	8.5	0.83	9.29	0.91	9.5	0.92
	Public clients	S02	7.5	0.71	8.77	0.82	7.83	0.75	7.32	0.71	8.25	0.80	8.6	0.84	9.21	0.90	9.3	0.90
	Consultant	S03	6.48	0.62	7.15	0.67	6.76	0.65	6.22	0.60	7	0.68	7.53	0.74	4.63	0.45	7.64	0.74
	Project end users	S04	6.29	0.60	8.23	0.77	5.67	0.55	8.64	0.84	7.92	0.77	7.8	0.76	2.59	0.25	7.05	0.68
	Design engineers	S05	6.29	0.60	8.92	0.83	5.3	0.51	7.5	0.73	6.1	0.59	8.27	0.81	6.96	0.68	8.05	0.78
	Supervision engineers	S06	6.95	0.66	7.42	0.69	8.85	0.85	8.27	0.80	7.08	0.68	6.64	0.65	8.89	0.87	8.5	0.83
	Main Contractor	S07	7.68	0.73	9.29	0.87	8.53	0.82	8.23	0.80	7.73	0.75	8.1	0.79	7.92	0.78	7.09	0.69
	Subcontractors	S08	6.95	0.66	8.17	0.76	6.8	0.65	6.22	0.60	6.53	0.63	5.73	0.56	4.15	0.41	6.95	0.67
	Owner financial supports.	S09	4.95	0.47	6.54	0.61	5.2	0.50	7.4	0.72	5.95	0.57	6.48	0.64	3.22	0.32	3.55	0.34
	Project management office	S10	5.48	0.52	7.71	0.72	6.79	0.65	7.74	0.75	5.92	0.57	4.03	0.40	8.93	0.88	5.05	0.49
	Fresh Concrete suppliers	S11	4.6	0.44	6.38	0.60	4.25	0.41	6.46	0.63	4.85	0.47	5.19	0.51	4.43	0.43	6.45	0.63
	suppliers	S12	4.55	0.43	5.63	0.53	4.27	0.41	7.26	0.70	4.5	0.43	5.85	0.57	4.92	0.48	6.64	0.64
External stakeholders	Representative of the Municipality.	S13	4.5	0.43	6.43	0.60	2.94	0.28	7.29	0.71	4.95	0.48	5.92	0.58	2.29	0.22	6.08	0.59
	Ministry of Housing and Utilities	S14	3	0.29	8.35	0.78	5.5	0.53	6.38	0.62	5.89	0.57	6.69	0.66	7.33	0.72	5.68	0.55
	Public projects authority	S15	3.14	0.30	6.71	0.63	4.14	0.40	6.74	0.65	5.2	0.50	5.35	0.52	1.15	0.11	5	0.49
	Urban Planning Authority	S16	4.43	0.42	6.28	0.59	4.16	0.40	7.5	0.73	5.47	0.53	4.15	0.41	1.16	0.11	5.14	0.50
	Authority of survey and roads.	S17	2.78	0.26	5.45	0.51	3.38	0.33	7.48	0.73	4.48	0.43	5	0.49	1.63	0.16	5.73	0.56
	The construction competitors companies	S18	3.25	0.31	4.14	0.39	2.25	0.22	5.26	0.51	3.32	0.32	3.71	0.36	0.98	0.10	2.5	0.24
	Local residents and neighbors	S19	1.81	0.17	3.67	0.34	3.79	0.36	5.68	0.55	3.09	0.30	4.05	0.40	2.12	0.21	2.76	0.27
	Engineers and workers unions	S20	1.63	0.16	3.31	0.31	1.38	0.13	5.79	0.56	2.1	0.20	4.11	0.40	0.78	0.08	2.68	0.26
	Media	S21	1.2	0.11	3.38	0.32	1.73	0.17	4.33	0.42	1.88	0.18	4.2	0.41	1.01	0.10	1.23	0.12

Table 13: LCI Stakeholders Salience Indices calculations.

classification	Stakeholder	ID	Average of Power Attribute		Average of Legitimacy attributes		Average of Criticality Attribute		Salience Index		
			Average of SMV	Average of RII	Average of SMV	Average of RII	Average of SMV	Average of RII	SSI (Eq.1)	Overall average RII	Rank
Internal stakeholders	Private clients	S01	9.38	0.89	8.86	0.86	9.39	0.92	110.2	0.89	1
	Public clients	S02	8.03	0.76	8.06	0.78	9.25	0.90	92.5	0.82	2
	Consultant	S03	6.80	0.65	6.92	0.67	6.13	0.60	56.8	0.64	6
	Project end users	S04	6.73	0.64	8.12	0.79	4.82	0.47	54.7	0.63	8
	Design engineers	S05	6.84	0.65	7.29	0.71	7.51	0.73	67.5	0.70	5
	Supervision engineers	S06	7.74	0.74	7.33	0.71	8.69	0.85	81.3	0.77	4
	Main Contractor	S07	8.50	0.81	8.02	0.78	7.50	0.73	83.2	0.77	3
	Subcontractors	S08	7.31	0.69	6.16	0.60	5.55	0.54	51.9	0.61	9
	Owner financial supports.	S09	5.56	0.53	6.61	0.64	3.39	0.33	33.8	0.50	13
	Project management office	S10	4.62	0.44	5.90	0.57	6.99	0.68	55.0	0.63	7
	Fresh Concrete suppliers	S11	5.08	0.48	5.50	0.53	5.44	0.53	37.0	0.52	12
	suppliers	S12	4.82	0.46	5.87	0.57	5.78	0.56	39.0	0.53	11
External stakeholders	Representative of the Municipality.	S13	3.87	0.37	6.05	0.59	4.19	0.41	31.5	0.48	14
	Ministry of Housing and Utilities	S14	5.62	0.53	6.32	0.61	6.51	0.64	49.0	0.59	10
	Public projects authority	S15	6.66	0.63	5.76	0.56	3.08	0.30	25.5	0.43	16
	Urban Planning Authority	S16	4.96	0.47	5.71	0.55	3.15	0.31	26.8	0.44	15
	Authority of survey and roads.	S17	4.66	0.44	5.65	0.55	3.68	0.36	24.6	0.42	17
	The construction competitors companies	S18	3.21	0.30	4.10	0.40	1.74	0.17	11.2	0.29	19
	Local residents and neighbors	S19	3.09	0.29	4.27	0.42	2.44	0.24	13.5	0.32	18
	Engineers and workers unions	S20	2.11	0.20	4.00	0.39	1.73	0.17	8.2	0.25	20
	Media	S21	2.10	0.20	3.47	0.34	1.12	0.11	5.9	0.22	21

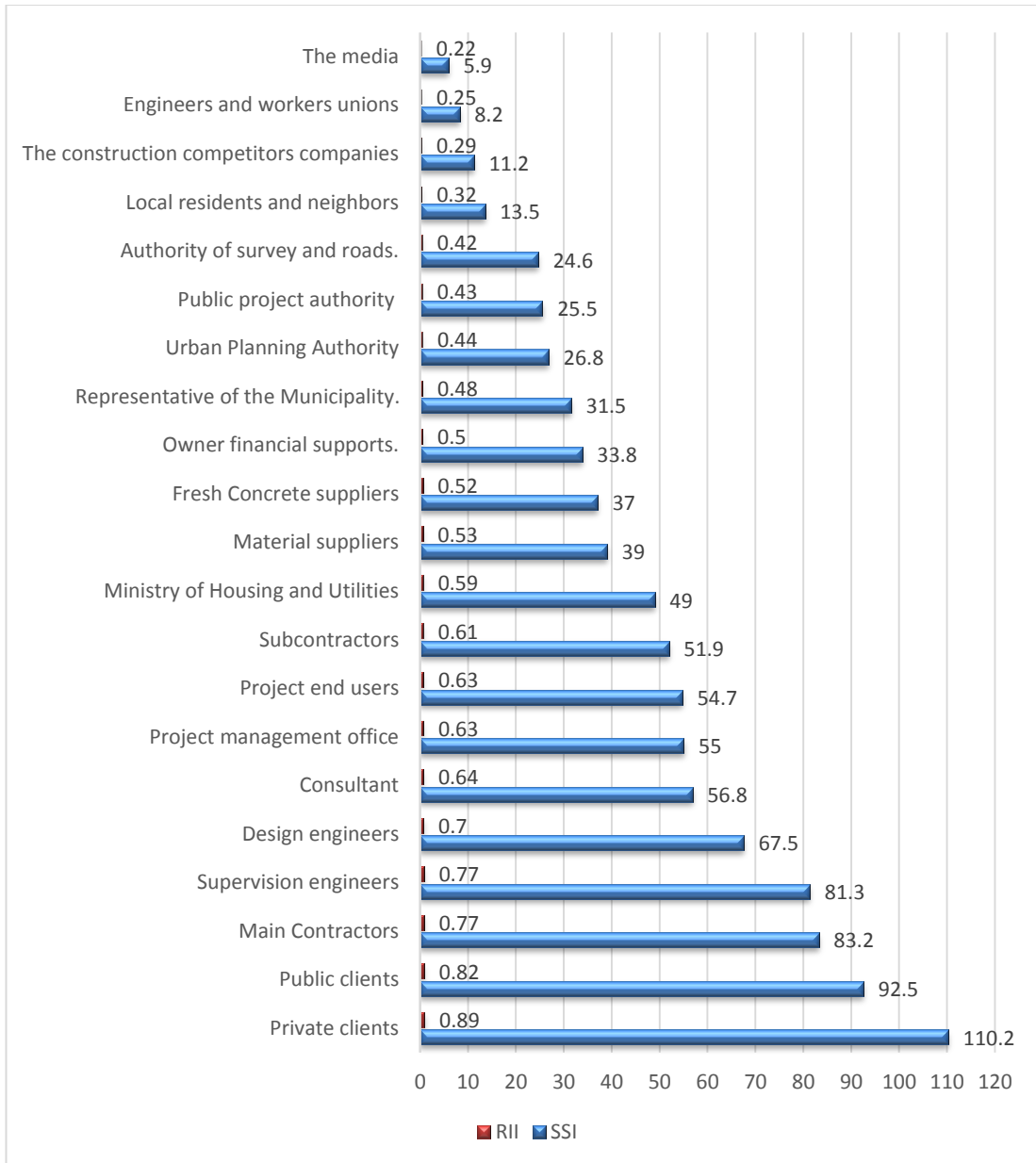


Figure 18: Stakeholder salience index SSI and Relative important index RII of LCI stakeholders.

4.6 Positioning the stakeholders in the Salience assessment matrix

This section explains the process of classifying and positioning the identified stakeholders of LCI based on the previous results of identification and prioritization. This process depends basically on plotting each stakeholder in the adjusted stakeholder assessment matrix as described in details in Chapter 3. The positions of the stakeholders in the matrix differ according to the values of RII of the identification assessment that showed in Table 12 (which indicates the Probability to impact/ability to contribute in the X-axis) and the SSI presented in Table 13 and Figure 18 (which indicates the salience classes in the Y-axis of the matrix). Figure 19 represents the results of positioning the identified LCI stakeholders in the assessment matrix.

The results of the assessment matrix shows a logical distribution of the stakeholders' positions in the four quadrants of the matrix. The most critical position of the matrix which is the key players (Primary project members) contains the highest four stakeholder' salience. These stakeholders in salience order are: Private clients, public clients, and the contractor and supervision engineers. It is fairly obvious by observing the matrix that among these stakeholders, the private owner is the only stakeholder that possess all important attributes (Power, Legitimacy and criticality) that make him in the Definitive class of salience. Meanwhile, the salience class of the public owner is Dangerous which possess only Power and Criticality attributes. Whereas the Contractor and supervision engineers possess a power and legitimacy attributes which make him in the Dominant class of salience.

On the other hand, the stakeholders that are located in the Keep informed quadrant, which classified as a key supporting participants are six stakeholders. These parties consist of the design engineers, consultant, project end users, project management office, subcontractors and owner financial supports. All these stakeholders possess high values of legitimacy and criticality attributes (i.e. their salience class is Dependent) except the owner financial supports which possess only criticality attribute lead them to be in Demanding class of salience.

The rest of the twenty one identified stakeholders distributed in the Keep satisfied and Minimal effort quadrants. All these stakeholders have been considered as external parties of the project except the Suppliers, which classified as a tertiary stakeholders and possess only a power attribute (i.e. Dormant class of salience). The other tertiary stakeholder is the Ministry of the Housing and Utilities and the results of the assessment matrix suggest to keep this stakeholder satisfied because of the power attribute that they possess towards the construction projects in Libya. Whereas the other stakeholders have been classified as extended stakeholders and require in general the minimal effort from the project managers due to their least salience. While half of these stakeholders possess a criticality attribute (i.e. the Representative of municipality, Public projects authority, Urban planning authority and authority of survey and roads) which make them in the Demanding class of salience, the other half of these parties have been located in the Discretionary class of salience and possess only a legitimacy attribute.

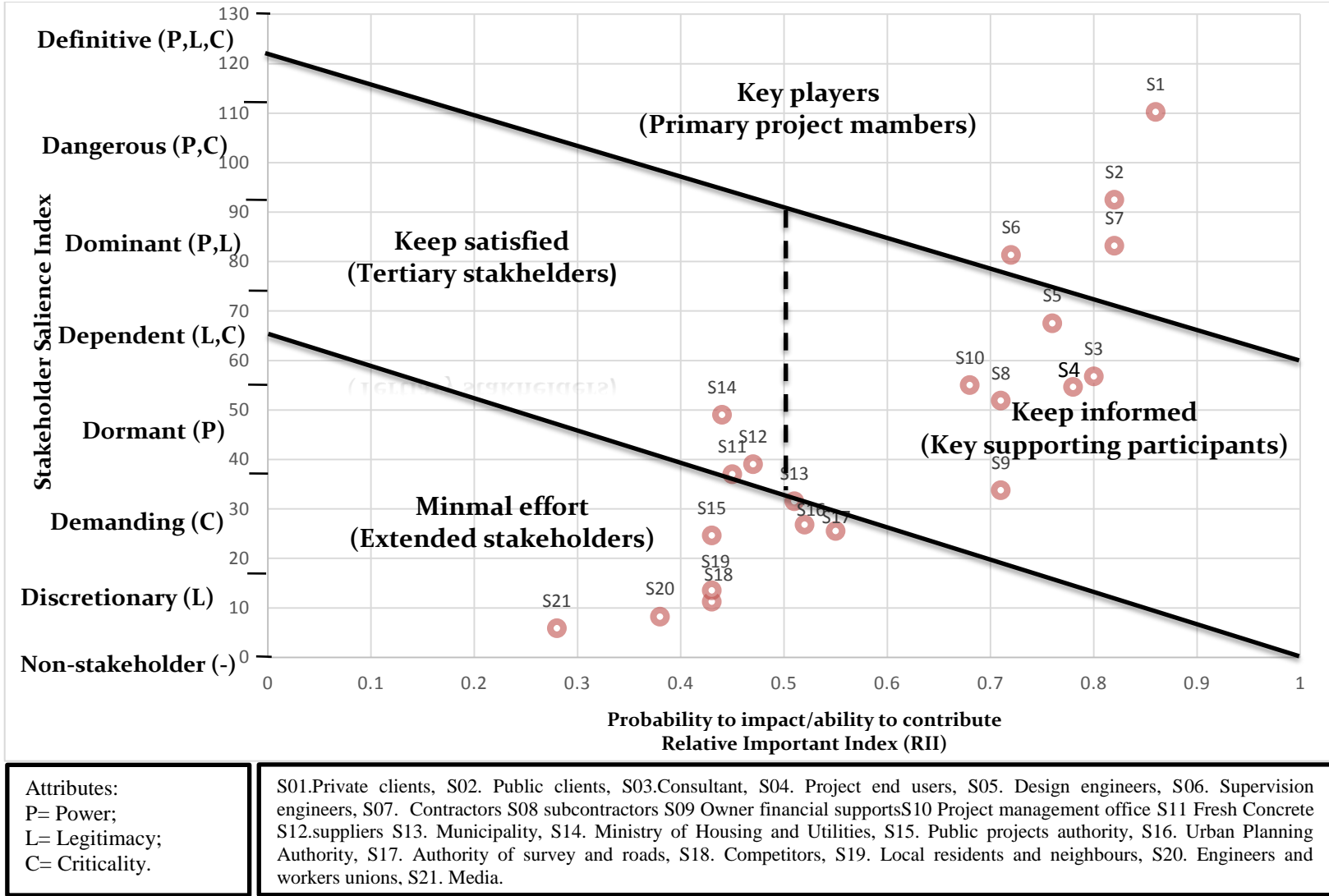


Figure 19: LCI stakeholder salience assessment matrix

Chapter 5

CONCLUSIONS

5.1 Conclusions

The conclusions drawn from the research study are summarized under different sections as follows: Stakeholder analysis framework model, LCI stakeholder identification; prioritization of identified LCI stakeholders; and positioning the stakeholders in the salience assessment matrix.

5.1.1 Stakeholder analysis framework model

In order to achieve the objectives that was set in this study, a systematic model of stakeholder analysis has been created and applied in LCI during this research. The model contains a three main phases and various processes. The main phases are, stakeholder identification, prioritization and positioning in the assessment matrix. In addition, every phase of has a clear and sequential process to apply and to follow. This model can decode the complexity of analysing the stakeholders in any construction industry because of its simplicity and straightforward guidelines. Furthermore, the results of applying this model in LCI were very logic and also supported by the literature (Aapaoja et.al, 2014; Yang et.al 2014).

5.1.2 LCI stakeholder identification

In this study, in order to apply the suggested stakeholder analysis model, the first step is to identify the potential parties that is involved in LCI. The following are the

conclusions drawn from the application of the identification phase of that framework model in LCI:

1. An analysis for the LCI has been conducted as an initial step to identify the involved stakeholder existed in that industry. The analysis was based on asking key questions and collecting the answer from literature, websites and interviewing a relevant researcher and industry professionals.
2. The identification process results twenty one (21) stakeholders involved in LCI. Twelve (12) of these parties are internal stakeholders and the rest of them (11) are external stakeholders.
3. The results of the identification phase have divided to two sections. The first section describes the registration output of the stakeholders which contains the corresponding objectives, roles and impact in the construction projects of each identified stakeholder. Whereas the second section illustrates the results of the identification assessment for each stakeholder which consists of the Statistical Mean value (SMV) and corresponding rank and Relative Important index (RII).
4. According to the identification assessment section responses of the questionnaire survey of this study, the private clients and main contractors have the highest SMV and RII among the internal stakeholders. Whereas the Survey and roads authority and Urban planning authority possess the highest SMV and RII among the external stakeholders.

5. By comparing the findings of this study with previous studies (e.g. Yang & Shen, 2014), it has been concluded that the end users in Libyan construction industry have less involvement compared with development countries, which could be one of the main causes of unfulfilled project objectives.
6. In addition, the local communities and project neighbours have low impact in LCI compared with other industries such as Hong Kong (Yang & Shen, 2014) which indicate a low attention given to the local communities' requests concerning the negative influence of the construction projects in Libya.
7. Also from the comparison it has been concluded that the environmental institutions in Libya have very low involvement in the execution of the construction projects compared with other development countries that seek for protecting their environment from the negative influence of the construction projects by restricting the project work with environmental laws and regulations.

5.1.3 Prioritization of identified LCI stakeholders

The second phase of the suggested stakeholder analysis framework model in this study is applying the prioritization processes of the identified stakeholders. The aim of this stage is to identify the level of attention that each stakeholder deserve in LCI according to the salience of its attributes. The conclusions from the application of this stage are as follows:

1. According to the survey results, the Private and Public clients possess the highest values of salience attributes and therefore the quantification of these attributes results values of SSI as 110.2 and 92.5 respectively. Therefore the

managers of the projects should pay the full attention to their requirements more than any other stakeholder in the project.

2. The main contractor and supervisor engineers follow these parties in the highest salience with Convergent SSI, which indicates the significant role that these stakeholders play in the project in order to meet the managers expectation.
3. The most salience stakeholders among the external parties of the project were the Ministry of housing and utilities (SSI=49) and Representative of Municipality (SSI= 31.5). This indicates the important impact of their laws and regulations in the construction projects that force the managers of LCP to give the proper attention to their requirements.
4. The least salience stakeholders included those parties that have a minimum involvement and contribution in the construction projects, and they internalized in the local resident and neighbours, competitors, engineers and workers unions and Media.

5.1.4 Positioning the stakeholders in the assessment matrix

Based on the results of the stakeholder identification assessment which consists of SMV and RII, and the results of prioritization process of these stakeholders (SSI), each stakeholder has been positioned in the stakeholder assessment matrix. The aim of this matrix is to clarify the right position and classification of each stakeholder in the construction projects, according to its salience and probability to impact or

contribute in LCI. The conclusions from positioning the stakeholders in the assessment matrix are as follows:

1. The most important key players in LCI are the private clients. In addition, among the internal parties of the project, this stakeholder is the only one that possesses significant Power, Legitimacy and criticality attributes (i.e. his salience class is Definitive).
2. The other stakeholders that have a Key player position in LCP and Primary project members classification, are the public clients, the contractor and supervision engineers which put them in a Dangerous class of salience and therefore has the highest impact on the development of the project.
3. The stakeholders that should keep informed in LCP are design engineers, consultant, project end users, project management office, subcontractors and owner financial supports who are classified as key supporting participants of the project. This position of these stakeholders are due to the significant legitimacy and criticality attributes that they possess towards the construction projects.
4. The project parties that have a classification of Tertiary stakeholders, and the project managers should keep them satisfied are the Ministry of the Housing and Utilities and project suppliers.
5. Eventually, the rest of the stakeholders required a minimal effort from project managers. However, four parties of them possess criticality attributes (Representative of municipality, Public projects authority, Urban planning

authority and authority of survey and roads) and require more attention compared with the other stakeholders that possess Legitimacy attributes such as Engineers and workers union and Media.

5.2 Research Achievement

The following points are the main achievements of performing this research study:

1. Development of a stakeholder analysis framework model, which can be effective to analyse the stakeholders in any construction industry.
2. Identification of the most important stakeholders involved in LCI (twenty one stakeholder). Twelve (12) of these parties are internal stakeholders and the rest of them (11) are external stakeholders.
3. Assessment of the involvement extent of the identified LCI stakeholders, which gives a good indication of the ability to impact and the level of contribution of each one of the identified parties in LCP.
4. A prioritisation of the identified parties has been conducted based on the salience of their attributes, which facilitate to the project managers the process of giving the proper attention that each stakeholder deserve in the project.
5. An identification of the stakeholders' classification and position in LCP, based on their salience index and their level of ability to impact or contribute in the project using the adjusted stakeholder assessment matrix.

5.3 Recommendations

Taking into account the findings from the literature review and the results of the LCI stakeholder identification, prioritization and positioning in the assessment matrix, the following recommendations are suggested for Libyan construction authorities, project managers of LCI and further researches:

1. The construction authorities in Libya should encourage the local communities and project neighbors to have more involvement in LCP in order to protect their rights from the negative influence that the execution of the construction projects may make.
2. The environmental institutions should have more contribution in LCP in order to reduce the undesirable consequences of the construction projects in the environment.
3. The managers should take into their account that the most salience stakeholders in LCP are the Private and Public clients, the contractor and supervision engineers. These stakeholders require the highest attention from the managers and they must engage them carefully.
4. The end users of LCP should have more involvement in the projects by the managers since the fulfilment of the project objectives depends basically on their perceptions and expectations.
5. The managers should obey and give more attention to the laws and regulations of Municipality and Ministry of housing and utilities since the

impact of these parties are the highest among the external stakeholders to avoid any disputes or conflicts that may delay the project delivery.

6. It is strongly recommended to implement the suggested framework model in this research to various Libyan construction projects as case studies and compare the outcomes with the findings of this research.
7. Future researches should be carried out for establishing a stakeholder engagement framework using the methodology and results of this study.

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APPENDIX

Appendix A: Questionnaire Survey Sample

Department of Civil Engineering,
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SURVEY QUESTIONNAIRE: Stakeholder identification and prioritization in Libyan construction industry

1. Introduction and Background of the study

Dear Sir/Madam,

As an important part of M.sc research titled stakeholder analysis in Libyan construction industry, this questionnaire intend to discover the salience of each stakeholder in the construction project, by examine the evaluation of most influential attributes of each stakeholder.

In a brief definition, Stakeholders are any group or individuals could affect or be affected by the construction project work or its results. So as to priorities this effect, the most important attributes has been chosen (power, legitimacy and criticality).besides, in order to increase the precision of the prioritization process, the attributes has been divided in to eight factors, every one of these factors has their own assessment as you will see in the survey.

Power factors:

4. Coercive
5. Utilitarian
6. Symbolic

Criticality factors:

7. Urgency
8. Importance

Legitimacy factors:

9. Pragmatic
10. Strategic influence
11. Position eligibility.

Be confident that all information provided will be strictly trusted and will be used purely for research purposes only. Please choose the appropriate value (from 0 to 10) for each stakeholders' attributes. Thank you for your time and valid contribution in advance.

Yours Faithfully,

AHMED HRAISHA
Ibrahim Yitmen
MSc Student
Research

Assoc. Prof. Dr.
Supervisor of Msc

E-mail: Hraisha88@gmail.com

2. Respondent Background	
What is your qualification level?	
<ul style="list-style-type: none"> <input type="radio"/> Diploma <input type="radio"/> BSc <input type="radio"/> MSc <input type="radio"/> PhD <input type="radio"/> other 	
What is your organization sector?	
<ul style="list-style-type: none"> <input type="radio"/> public <input type="radio"/> private 	
What is the type of service that your organization provide?	
<ul style="list-style-type: none"> <input type="radio"/> Consultation <input type="radio"/> Design <input type="radio"/> Construction <input type="radio"/> Other (please specify) 	
What is your Working position?	
<ul style="list-style-type: none"> <input type="radio"/> project Manager <input type="radio"/> Engineer <input type="radio"/> research / academic <input type="radio"/> Architect <input type="radio"/> Contractor <input type="radio"/> Owner <input type="radio"/> Other 	
Years of experience in Libyan construction industry:	
<ul style="list-style-type: none"> <input type="radio"/> 1-5 years <input type="radio"/> 6-10 years <input type="radio"/> 11-15 years <input type="radio"/> 15+ years 	
How many projects your experience contain?	
<ul style="list-style-type: none"> <input type="radio"/> 1-4 <input type="radio"/> 5-8 <input type="radio"/> 9-12 <input type="radio"/> 13-16 <input type="radio"/> + 16 	
Which of the following best describes the principal construction projects of your organization?	
<ul style="list-style-type: none"> <input type="radio"/> Residential Industrial <input type="radio"/> Institutional Commercial <input type="radio"/> Government infrastructure <input type="radio"/> Other 	

3. Identification assessment part: Please tick (✓) the appropriate cell for your response.

To what extent do you think the following individual or organizations are stakeholders in the Libyan construction projects?

Values and their description	0	1	2	3	4	5	6	7	8	9	10
Stakeholder											
The project owner (private projects)											
Government representative in public projects											
Consultant											
Design engineers											
Supervision engineers											
Main Contractor											
The subcontractor											
Owner financial supports.											
Project management office											
Fresh Concrete suppliers											
Material suppliers											
The project users											
Representative of the Municipality.											
Ministry of Housing and Utilities											
Project management service											
Urban planning service											
Authority of survey and roads.											
The construction competitors companies											
Local residents and neighbors											
Engineers and workers unions											
The media											

4. Factors assessment stage: please put the appropriate value as described based on your experience for the following factors:

First: Power attribute factors

1- Coercive: To what extent the stakeholder use threatening and violence behaviours to obtain the desired outcomes in the project?

Values and their description	0-2	3-4	5-6	7-8	9-10
Stakeholder	His threatening position is null or very low	He is using threatening argument.	He is able to pose real threats regarding his claims in the project	He is capable of using some elements of force, violence and restraint	He is Determined and totally capable of using force, violence, or any other restrain resource.
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

First: Power attribute factors					
2- Utilitarian: The range of controlling the resources (material, financial, services, or information) used in the project by the stakeholder.					
Stakeholder Values and their description	0-2	3-4	5-6	7-8	9-10
	has null or very low control over the project resources	has some control over some of the resources	Has total control of the use of some resources	The stakeholder heavily administers significant number of the resources	The stakeholder extensively administers most of the resources
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

First: Power attribute factors					
3- Symbolic: Extend of using normative symbols (prestige, esteem) or social symbols (love, friendship, and acceptance) to influence on the project work or its outcomes.					
Values and their description Stakeholder	0-2	3-4	5-6	7-8	9-10
	The stakeholder does not use or barely uses them.	He uses some level of normative symbols or social symbols	He uses moderate levels of normative symbols or social symbols	He relies on normative symbols and/or social symbols to claim his stakes	Extensively use normative symbols and social symbols to obtain his desired outcomes.
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

Second: Criticality attribute factors

1- Urgency: indicates the amount of time offered by the stakeholder to obtain his requirement in the project.

Values and their description Stakeholder	0-2	3-4	5-6	7-8	9-10
	He is time insensible or has very low demands for a timely response	Asks for its stakes or values with enough anticipation (in a timely manner)	Requires attention to its stakes in plausible or reasonable times	Calls for a prompt attention to the stakes at risk in the project work.	Demands immediate attention to his decisions or requirement.
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

2- Importance: the degree of the stakeholders' dependency that is put the project at risk.

Values and their description Stakeholder	0-2 The stakeholder has null or very low dependency	3-4 Shows low dependency on the values obtained from the project.	5-6 relies on the values obtained from the project for its future actions or	7-8 Shows high dependency on the stakes it contributes at risk in the project.	9-10 Demonstrates very high dependency on the stakes it puts the project or its outcomes at risk.
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

Third: Legitimacy attributes factors					
1- Pragmatic: Degree of the compatibility between the stakeholder's actions and the work ethics, laws and regulations related (E, L&R) to the project.					
Values and their description Stakeholder	0-2	3-4	5-6	7-8	9-10
	He has null or very low respect for the work (E, L&R).	His actions shows low respect for the work (E, L&R)	His actions shows acceptable respect to the work (E, L&R)	His actions has high compatibility with work (E, L&R)	His actions are very fair and shows a very good model in being sincere with work (E, L&R).
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

Third: Legitimacy attributes factors

2- Strategic influence: the extent of long term effect of stakeholders' decision in the project work or its outcomes.

Values and their description Stakeholder	0-2 His decisions has null or very low strategic effect.	3-4 His decisions has low effect and does not require much attention.	5-6 His decisions has moderate strategic influence.	7-8 The strategic effect of his decisions is very important.	9-10 The project success depend on the efficient of his strategic decision.
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

Third: Legitimacy attributes factors

3- Position eligibility: Degree to which the legitimacy of the stakeholder is taken for granted without an explicit evaluative support.

Values and their description Stakeholder	0-2 He has null or very low right to be in his position.	3-4 His selection has done without clear criteria.	5-6 His selection has done with reasonable criteria	7-8 He should be in his position	9-10 He is the best choice to his position because of his efficiency and experience.
The project owner (private projects)					
Government representative in public projects					
Consultant					
Design engineers					
Supervision engineers					
The Contractor					
The subcontractor					
Owner financial supports.					
Project management office					
Fresh Concrete suppliers					
Cement and steel suppliers					
The project users					
Representative of the Municipality.					
Ministry of Housing and Utilities					
Project management service					
Urban planning service					
Authority of survey and roads.					
The construction competitors companies					
Local residents and neighbors					
Engineers and workers unions					
The media					

