EXTERNAL STAKEHOLDER MANAGEMENT AT THE PLANNING STAGE OF CONSTRUCTION PROJECTS IN GHANA: CONSULTANTS' PERSPECTIVE

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External Stakeholder Management at the Planning Stage of Construction Projects in Ghana: Consultants' Perspective

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CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it produces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

(Signed)

_____

Dennis Goodenough Oppong (Name of student)

DEDICATION

First, I dedicate this thesis to the Lord God Almighty, the maker, saviour and sovereign ruler of the worlds through my Lord Christ Jesus, for the provision of necessary grace, protection, direction and inspiration to successfully undertake the study. Moreover, I dedicate the outcome to my parents Mr. Kwame Oppong (deceased) and Miss Rose Attah-Dokua; and my siblings Mr. Prince Oppong and Miss Fortune Oppong for their encouragement, prayers and investments in my education and life.

ABSTRACT

The relevance and benefits of construction stakeholder management have been globally acknowledged in research. Effectiveness of SM contributes directly to the success of construction projects. Moreover, mutual stakeholder satisfaction (SS) has become an important criterion of project success and complements the conventional cost, time and quality criteria. However, despite the high success levels attributed to stakeholder management in other industries like manufacturing, the construction industry has attained poor records, especially in developing countries. Meanwhile, external stakeholder management (ESM) is more problematic because the external stakeholder groups (ESGs) are exceedingly crucial for project success at the planning stage (PS) than the internal stakeholders. The consequences of ESGs' influences and actions have been witnessed in the failure of diverse construction project developments in Ghana and other developing countries. Additionally, mutual SS is a subjective and abstract concept, inherently fuzzy in nature, and interpreted differently by practitioners. It has become increasingly difficult for practitioners to use mutual SS as an objective measure of construction project success. The result is the somewhat disagreement on "what constitutes project success" objectively in the industry.

Based on the aforementioned premises, the study aims at developing a framework that will serve as an industrial guide for ESM practice and performance evaluation at the PS of construction projects. The six derived objectives were achieved through in-depth review of pertinent literature; case study; ordinary questionnaire survey; semi-structured expert interviews; and a six-round Delphi questionnaire survey on consulting experts in Ghana. The data analysis was carried out using analytical techniques including content analysis, factor analysis, and fuzzy set theory.

Given the underlying reasons, the results manifest that the practitioners consider the governmental authorities as most difficult to manage, then followed by the affected local communities and the

general public stakeholders in descending order of criticality. Further, the practitioners mostly use stakeholder consultation approaches to identify the ESGs and their project expectations; urgency and scope conformity of concerns to prioritise ESGs; and meetings to engage with ESGs. Besides, the practitioners consider avoiding or minimizing ESGs' disturbances on project as the topmost ESM objective; compromising to ESGs' demands within project scope as the top strategic measure usually applied; treating every person and issue with utmost respect and fairness as the best approach to manage the ESGs' dynamics; and feedback from ESGs (e.g. potential improvement in lives) as the most useful indicator of performance. Generally, the practices adopted to manage ESGs are not formally established and documented, and hence, the difficulties faced in the management process. In terms of expectations, the three ESGs are all concerned with economic, social, cultural, environmental, religious, technical, legal, ethical and informational issues in projects.

Aside, the underlying obstacles that practitioners should be conscious and proactive about are limited management capability; stakeholder influence potential and cultural differences; dynamic and uncertain stakeholder environment; political actions and invisibility of stakeholders; limited project knowledge and collaboration problems; and stakes mal-distribution and adversarial perspectives. Essentially, the practitioners should consider information gathering and continuous analysis of issues; planning and undertaking responsibilities; effective communication and satisfaction monitoring; assessing stakeholder influence and strategizing; assessing stakeholder characteristics and alternative solutions; respecting and involving the stakeholders; and building good relationship with stakeholders to effectively manage the ESGs at the project PS. Moreover, the practitioners must appropriately and objectively evaluate communication effectiveness; stakeholder support of project; management monitoring and response; smooth project facilitation;

conflict mitigation; and uncertainty and risk mitigation measures to realise the mutual satisfaction/dissatisfaction level of ESGs in project development.

The resultant validated framework will help practitioners to equitably and sustainably manage ESGs, optimize mutual benefits and values, minimize negative impacts, and attain mutual ESG satisfaction in construction project developments. Moreover, the mutual satisfaction of the ESGs considered in construction project developments could be assessed and compared in a more appropriate, objective, and reliable manner. Finally, it explores gaps that substantially add to the knowledge base on best practices to attain, assess, benchmark, monitor and upgrade the mutual satisfaction level of ESGs in construction project development of Ghana and other developing countries sharing similar industry characteristics, project features, and external stakeholder structure.

Keywords: External stakeholder management; construction project; planning stage; practices; performance.

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LIST OF ABBREVIATIONS

ALC	Affected local community
BEM	Bisector error method
CC	Construction consultant
CEM	Construction engineering and management
CSF	Critical success factor
EIA	Environmental impact assessment
EPA	Environmental protection agency
ESE	External stakeholder environment
ESG	External stakeholder group
ESM	External stakeholder management
ESMPI	External stakeholder management performance index
FA	Factor analysis
FQR	Fuzzy quantitative requirement/range
FST	Fuzzy set theory
GA	Governmental authority
GCI	Ghana construction industry
GP	General public
HEM	Horizontal error method
KPI	Key performance indicator
MF	Membership function
MHA	Modified horizontal approach
MWDP	Mae Wong Dam Project
PCFA	Principal component factor analysis
PI	Performance indicator
PM	Project manager
PPP	Public-private partnership
PS	Planning stage
PSE	Project stakeholder environment
QI	Quantitative indicator
QR	Quantitative requirement/range
SF	Success factor
SM	Stakeholder management
SNA	Social network analysis
SS	Stakeholder satisfaction
VEM	Vertical error method

CHAPTER 1 INTRODUCTION OF RESEARCH

1.0 INTRODUCTION

Stakeholder management (SM) has been revealed as important in successions of construction engineering and management (CEM) research (Newcombe, 2003; Bourne, 2005; Olander and Landin, 2005, 2008; Olander and Atkin, 2010; Yuan et al., 2010), and progressively professionalised in the construction industry (Yang and Shen, 2015). Such knowledge of SM is not only found in literature but also in software packages and core practices of construction management (Yang and Shen, 2015). Furthermore, stakeholder satisfaction (SS) has been shown to be a key criterion for the measurement of project success (Davis, 2016). In effect, if a project only fulfils the classic requirements of time, quality and cost, it may not be regarded as successful unless it reflects in the satisfaction of stakeholders (Davis, 2016). An example of construction project that did not satisfy some stakeholders despite meeting time, cost and quality objectives is the Heathrow Terminal 5 project of the UK (Brady and Davies, 2010).

Different stakeholders pursue diverse interests and expectations in construction project development. The interests and expectations emphasize the relevant connections between the project and stakeholder environment. The level of relationship between project and multi-stakeholders depends greatly on the extent and kinds of investments and interests that are established in projects (Yang, 2010). The stakeholder groups also become more apparent in highly complex projects that have devastating social and environmental impacts in communities (Manawong and Ogunlana, 2008). Hence, the success of construction project is contingent on it fulfilling stakeholders' expectations across the lifecycle (Atkin and Skitmore, 2008). The focus is to align the expectations with project goals so that conflicts are alleviated extensively. As such,

the project purpose ought to be well-defined and understood, and feedback should be solicited from the stakeholders (Jergeas et al., 2000).

Ineffective management of external stakeholder groups (ESGs) could lead to complicated problems that will culminate in project failure. In this research study, attention is given to developing a practice framework focused on five main areas that are believed to help improve ESM in the Ghana Construction Industry (GCI). These are: (i) current practices of ESM; (ii) the expectations of ESGs; (iii) obstacles of ESM; (iv) critical success factor (CSFs) for ESM; and (v) assessment of ESM using key performance indicators (KPIs). The derived framework will serve as an insightful reference for decision-makers and practitioners in successfully considering ESGs and their expectations in construction project development. The five important areas covered in the study have not been comprehensively studied, especially in the contexts of developing countries and the planning stage (PS) of project.

1.1 DEFINITIONS

1.1.1 Stakeholder Management

According to Yang and Shen (2015), SM is "a process comprising problem-solving activities, minimizing project risks, and facilitating projects to move forward in a timely and effective manner". This definition throws light on three main issues: (i) there are problems (ii) risks are associated with such problems, and (iii) solutions are required to facilitate project success. Moreover, McElroy and Mills (2003) described SM as "the continuing development of relationships with stakeholders for the purpose of achieving a successful project outcome". Furthermore, Olander and Landin (2008) considered SM as "having the aim of maintaining the desired implementation of the project and avoiding unnecessary conflict and controversy with

stakeholders". PMI (2004) also explained SM as "the systematic identification, analysis and planning of actions to communicate with and influence stakeholders".

Based on the prior definitions, SM in this study is explained to encompass "*all management processes and activities determined to properly handle the diverse and conflicting interests and expectations of, as well as the interrelationships among, the individuals and entities related to the affairs of construction projects, whether tacitly or explicitly defined"*.

In terms of the managerial processes and functions, Cleland (1988) considered management functions including planning, organising, motivating, directing and controlling resources employed to handle stakeholders. Young (2006) also stated functions including identifying stakeholders, gathering information about stakeholders, and analysing the stakeholder influence. The separate functions and processes identified in literature have been consolidated in the Table 3.8. It is observable from Table 3.8 that the SM processes outlined are very broad in nature. In the context of Ghana, the public engagement exercises are not very mature so practitioners usually engage the ESGs in piecemeal. For instance, the practitioners may choose to engage the project affected local communities (ALCs) and governmental authorities (GAs) separately. Generally, the SM considered in this study incorporates but not limited to just the public engagement exercises. SM must provide the project organisation with a framework to help select applicable and practical options to manage construction stakeholders (Cleland, 1999). Therefore, effective SM ensures that both the project organisation and multi-stakeholders are satisfied thereby.

1.1.2 External Stakeholders

The study adopted the internal and external stakeholder classification model. The internal stakeholders officially form the project coalition or fund the project, whiles the external

stakeholders are others that are interested, experience the impacts, or exercise responsibilities in construction project (Mostafa and El-Gohary, 2015; Winch and Bonke, 2002; Calvert 1995). The internal stakeholders encompass the project owners, clients, financiers, project leaders, designers, contractors, suppliers and subcontractors (Manowong and Ogunlana, 2010; Moura and Teixeira, 2010; Olander, 2003). Also, the external stakeholders comprise national and local authorities of governments, political organisations, social organisations, real estate owners, the general public (GP), environmentalists, local communities, interest groups, social services, nearby residents (e.g. schools and hospitals), trade and industry, and media (Cleland, 1999).

1.1.3 Construction Project and its Environment

A project is "a temporary endeavour undertaken to create a unique product, service, or result" (PMI, 2013, p. 3). A construction project is explained as a "non-linear, complex, iterative and interactive project system environment" (Bourne and Walker, 2006; Pryke, 2006, p. 213), that assembles a lot of people and resources. Construction projects broadly cover buildings, roads, bridges, railway, dams, airports and other civil works. Construction projects are by nature surrounded with a lot of controversies due to the conflicting multi-interests and devastating impacts (Olander, 2003). This study focuses on construction projects generically without differentiating between project types or nature. For instance, the intent of the study is not to investigate how ESM compares between public and private projects, and between transport and dam projects. On the contrary, the motivation of the study is to consolidate best practices that could be employed to improve ESM in generic construction projects. However, the generic framework developed at the end enables practitioners to select only the best practices that are suitable for managing ESGs in each project case (see Section 10.3).

The project environment is defined in conformance with the Random House dictionary as "the aggregate of surrounding things, conditions or influences" (Youker, 1992). Mintzberg (1979, p. 267) emphasized that the project environment practically encompasses "its technology (i.e. the knowledge base, from which, it must draw upon), the nature of its products, customers and competitors, its geographical setting, the economic, political and even meteorological climate in which it must operate". Contingency factors that challenge the SM process have been used to explain the project environment to be highly complex, uncertain, and equivocal in nature (Burton and Obel, 2003). The relationship between a construction project and its uncontrolled environment presents great uncertainty and challenge to the project managers (PMs) who are responsible for balancing the competing claims on resources (Youker, 1992; Bourne, 2005). Aaltonen (2011) explained the External Stakeholder Environment (ESE) to encompass all stakeholders that are external to the project and the interrelationships existing among them. While some projects are active (constantly searching and intruding) in their ESE, other projects are passive in their ESE and only respond when conflicts occur (Aaltonen and Sivonen, 2009). However, construction projects must be implemented in a way that promotes relationship with the ESE in order to significantly improve relationship between clients, consultants and contractors (Ling and Khoo, 2016).

1.1.4 Planning Stage

In this study, the PS is simply regarded as all project activities prior to actual construction. In project development, designs and plans are continually reviewed at this stage until balance and equity are attained among stakeholders' expectations. Ambiguity about the project stakeholder environment (PSE) is greatest at the PS, and that provides opportunity for sense-making and governs the implementation, in-use and disposal of construction projects (Fellows and Liu, 2017).

The PS is very critical because it is where stakeholders' positions are shaped and their influence potentials in project development are highest (Aaltonen et al., 2015; Olander and Landin, 2005, 2008; Aaltonen and Kujala, 2010). It is the most useful time to accommodate needed innovation activities and plan the project execution to optimize values for the stakeholders (Kolltveit and Grønhaug, 2004). Critical decisions at this stage immensely affect the economy, efficiency, duration, functionality, appearance and ultimate values that stakeholders derive from the project (Takim, 2009). Aaltonen (2011) asserted that openness, dialogue and active stakeholder engagement at the PS reduce the potential of conflict during project execution. Therefore, substantial management activities directed at the ESE are essential for achieving construction project success.

1.1.5 Construction Consultants

Construction projects are usually undertaken at the organisational level where a number of segmented teams come together to form the entire project teams. The key parties constituting the project teams are the clients, consultants and contractors (Senaratne and Ruwanpura, 2016). The three parties are linked to projects by contractual relationships and undertake the responsibility of managing all affairs of the projects. The project teams can be categorized into five sub-groups: client/developer representatives, project management consultants, construction supervision consultants, design consultants, and construction contractors (Toor and Ogunlana, 2008). This research targets construction consultants (CCs) which encompass the project management consultants, construction supervision consultants, design consultants and other consultants that may be applicable in the GCI. ESGs are not well-organised like the internal stakeholder counterparts and yet can be far more disturbing at the PS. The CCs play a big role in managing the ESGs at the PS of construction projects in general.

1.2 BACKGROUND

1.2.1 Stakeholder Management and Construction Project Success

CEM research has shown that the continuous engagement of all stakeholders and the management of complex interactions and relationships among stakeholders are contributors to construction project success (Ward and Chapman, 2008; Takim, 2009; Olander, 2007; Chinyio and Akintoye, 2008; Wu et al., 2019). In contrast, project failure has been attributed to ineffective or lack of SM in construction project (Olander and Landin, 2008; Bourne, 2005; Akintoye et al., 2003). This implies that effective SM contributes greatly to the realization of project success.

The diverse expectations of stakeholders about project strongly influence successful delivery. The inability of PMs to balance or address the conflicting expectations of stakeholders can contribute to project failure (Akintoye et al., 2003; Bourne, 2005; Chinyio, 2010). The failure could be explained by the consequent budget and time overruns, excessive claims and poor relationship with the stakeholders (Jergeas et al., 2000; Karlsen, 2002; Yu et al., 2007; Yang et al., 2011a). Meanwhile, stakeholder attributes like interests, influences and information are not static but rather vary over time within a specific stage or across successive stages of project (Jergeas et al., 2000; Ward and Chapman, 2008; Aaltonen et al., 2008). As such, the opinions and actions of stakeholders at the PS may differ from the construction and in-use stages. However, the PS is recognized to be more important in managing project stakeholders (Olander and Landin, 2005, 2008; Aaltonen et al., 2015). Therefore, effectively engaging and meeting the expectations of stakeholders at the PS is very crucial for project success and SS.

1.2.2 The Challenge of External Stakeholder Management in Projects

Acknowledging that construction projects are undertaken in broader uncontrolled environments is essential in understanding the importance of ESGs in project development. Construction projects

are responsive to the actions and influences of ESGs (El-Sawalhi and Hammad, 2015). The ESGs take advantage of their expectations and interests to influence project implementation. As such, PMs need to properly coordinate the diversified stakeholder expectations and relationships in order to realise success (Olander and Landin, 2005; Atkin and Skitmore, 2008). The expectations take the form of social, political, cultural, economic, environmental, technical, and religious belief dimensions (Ezeabasili et al., 2015; Orr and Kennedy, 2008; Orr and Scott, 2008; Ng et al., 2013; Tam and Tong, 2011).

Traditionally, SM in construction research and practice has focused more on internal stakeholders than external stakeholders (Beringer et al., 2013; Di Maddaloni and Davis, 2018). Similarly, Atkin and Skitmore (2008) reported that internal stakeholder relationships including procurement and site management have been traditionally emphasized, whiles the management of relationships with ESGs has been relegated to public officials via the rules and regulations guiding project implementation. Moreover, project management scholars have given more attention to examining internal SM in line with economic interests that cover suppliers, sponsors, customers, etc. (Aaltonen, 2011). However, there has been increasing internal and external pressure on projects to fulfil social and environmental responsibilities towards all stakeholders (Aaltonen, 2011). Similarly, "social license", which simply refers to the continual support that multi-stakeholders offer to project implementation, is anticipated to become a key phenomenon in the construction industry. This is due to the prevailing social pressures for projects to meet social and environmental standards in the industry (Barreiro-Deymonnaz, 2013). Hence, ESGs' concerns ought to be equally incorporated into project decisions to achieve success (IFC, 2007).

The ESGs are not well-defined and organised as their internal stakeholder counterparts who are connected to projects by formal agreements. Thus, the ESGs may show up unexpectedly to express

interests in projects where they feel affected by project development. Besides, contemporary studies have consistently acknowledged the need for PMs to embrace the dynamics in the PSE (Park et al., 2017; Yang and Shen, 2015; Molwus et al., 2017). Meanwhile, a great number of construction projects fail to acknowledge SM process as dynamic and ongoing practice (Eskerod and Vaagaasar, 2014). The improper usage of strategies and models has produced unfavourable results, where ESGs especially wielded more oppositional power against construction project development (Aaltonen et al., 2015). This has become a great problem given that ESGs can have tremendous impact on construction projects if not properly managed. Accordingly, Cleland (1988) opined that the principal justification for adopting the SM approach lies in the enormous impact that ESGs can have on projects. Arguably, the extent of construction project success is partly reliant on how well the influence strategies and expectations of ESGs are managed.

1.2.3 The Need for A Framework to Manage External Stakeholders in Projects

Over the years, the influence that ESGs can have on construction project implementation has been progressively analysed (Olander and Landin, 2005, 2008; Olander, 2007; Yang, 2014). The ESGs may adopt strategies including the indirect and direct withholding; coalition, resource and credibility building; direct action; conflict escalation; inputs compromising; and communication strategies as means to dynamically shape their salience attributes in construction projects (Aaltonen et al., 2008; Nguyen et al., 2018, 2019a, 2019b; Vuorinen and Martinsuo, 2019). If the ESGs are not fully convinced of the PMs' responses to their requests, they may further fall on other sophisticated and crude approaches such as scheming on the media, vandalism, public street matches, community picketing, or court proceedings (Moore and Warren, 2006; Teo and Loosemore, 2012). This project-frustrating capacity of ESGs is underlined by the resources and relationship networks at their disposal.

Many consequences of mismanaging ESG expectations and interests have been identified in literature. Some include negative future relationships, lack of stakeholder support and endorsement to commence project, conflicts, disrupted project progress, meeting unintended goals, negative community reactions and oppositions, and unusable project deliverables (Takim, 2009). A number of project failures due to the mismanagement of multi-stakeholder expectations and interests have been elaborated in literature (Morris and Hough, 1987; De Schepper et al., 2014).

The consideration of ESGs at the PS of construction projects is more critical that their internal stakeholder counterparts (Olander and Landin, 2005). This is because the internal stakeholders often support the project development whiles the ESGs may be either in support, against or even indifferent until they feel affected (Takim, 2009). Generally, SM has attained a poor record in construction project delivery over the past decades resulting from the growing uncertainty and complexity of the project environment (Loosemore, 2006; Yang et al., 2009b; Park et al., 2017).

According to Karlsen (2002), a systematic framework which is applicable to real-time construction projects for managing stakeholders is still lacking in practice. Again, Rowlinson et al. (2010, p. 216) opined that "…the issue of stakeholders and their management was paid scant regard; the government was used to making decisions on development rather than consulting widely with the major players…". In the construction industry, stakeholder and relationship management is still at infancy level (Rowlinson et al., 2010). Although managing stakeholders and their relationships is supposed to be a daily business undertaking, it is not treated as a well-established activity in practice (Rowlinson and Cheung, 2008). In effect, SM is often undertaken in ad hoc and random manner instead of a feasible systematic approach (Yang and Shen, 2015). For instance, Molwus et al. (2014) acknowledged that in the UK alone, SM has not been fully embraced as a clear-cut strategy for managing construction projects. Widén et al. (2014) further emphasized the need for

a structured stakeholder engagement process to be properly integrated into the entire innovation process of construction projects. Recently, Park et al. (2017) noted that construction projects are becoming more dynamic and uncertain, and more attention needs to be paid to customizing SM to suit projects with different features like duration, size, type, complexity, and environment. They argued that most SM guidelines are conceptual in nature instead of practical instructions for solving real-time project issues; stakeholder interests in projects could be very numerous and diverse; and project contexts such as multicultural features, local environment, economic development of area, etc. could hinder SM effectiveness (Park et al., 2017).

A major setback of project management is the multiplicity of tasks and stakeholders resulting in the increasing complexity and uncertainty of modern construction projects (Yang et al., 2009b; Park et al., 2017). Gan and Li (2012) attributed the lack of consistent, formal and systematic SM process to the nature of construction projects including disposability, multiplicity of targets, and complexity of the project environment. Olander and Landin (2008, p. 557) found out that "if there is no clear strategy for how to manage and involve stakeholders in the project implementation process, the project manager will end up in a rearguard action, fending off claims from stakeholders". The consequence will be the emboldened stakeholder capacity to disrupt the progress of project. According to Molwus (2014, p. 133), "it is necessary to adopt a framework for stakeholder relationship at the outset of projects". Based on the aforementioned premises, it is needful to develop a practical framework, aimed not just at ensuring effectiveness of the ESM process, but also improving the assessment, benchmarking and monitoring of ESM performance at the PS of construction projects.

1.2.4 The Context of Ghana

SM is very sensitive to the project environment in context. Jurgens et al. (2010) discussed the

differences occurring between North America and Europe in terms of the stakeholder theory and practices. Developed countries have used varying SM approaches in construction project implementation, which were focused on solving construction industry problems and practices (Beach, 2009). In developed countries like Finland and the UK, stakeholder engagement has been greatly embraced as an approach to improve the delivery of construction projects (Chinyio and Akintoye, 2008). These efforts are backed by the establishment of central agencies (e.g. Building and Construction Authority, Singapore; and Construction Industry Board, UK) to spearhead long-term revolutionary policies in the respective industries (Ofori, 2012).

As it is needful, calls have been made for the establishment of a similar central agency (i.e. CIDA Bill, 2015) to coordinate the research and activities of separate organisations in the GCI (Ofori-Kuragu et al., 2016; Ofori, 2012). Meanwhile, the construction industries of developing countries have common characteristics like the experiences of socio-economic stress, weaknesses of the institutions, limitation of needed resources, and inadequate capacity to manage the major issues (Ofori, 2000). Largely, projects in the GCI hardly meet the delivery targets; an experience attributed to the roles of stakeholders in the project development process (Auditor General Report, 2013 cited in Eyiah-Botwe et al., 2016). Despite the socio-economic relevance of projects, Ghana is yet to fully embrace formal and systematic SM process as an important project management skill to enhance construction project delivery. The present situation is because of the lack of historical documentation on the GCI (Eyiah-Botwe et al., 2016). Consequently, PMs in the GCI consider and practise SM in parts with their mental records instead of following a formal and documented procedure (Eyiah-Botwe, 2015). This contradicts the observed trend that adopting high-level pre-project planning (with effective participant requirement definition) could minimize scope changes and save up to 39% and 20% of project time and cost respectively (Hamilton and

Gibson Jr, 1996). Unsurprisingly, construction projects face greater problems and opposition in developing countries than in developed countries (Rwelamila et al., 2015).

Ghana, alike many other developing countries, has not matured with the public participation or engagement exercises in construction project. In most cases, the practitioners and decision-makers are not proactive with engagement practices until the ESGs raise issues about proposed projects that must be addressed. Sometimes, the engagement exercises are carried out in bits (meeting different groups separately) rather than collective participation of the entire public. Tengan and Aigbavboa (2017) found out that the beneficiary communities are not critical participants in the engagement and participation exercises at the PS for the monitoring and evaluation of public construction projects. The situation is ascribed to lack of knowledge, understanding, involvement, and time commitment for monitoring and evaluation of projects by diverse stakeholders. Amponsah (2012) argued that the high level of development project failure in Ghana can be explained by the poor nature of stakeholder engagement practices. These facts are however contrary to literature which greatly supports participation of multi-stakeholders across the lifecycle to guarantee accountability and project success (Tengan and Aigbavboa, 2017).

Yang and Shen (2015) opined that tradition and cultural differences are very important and ought to be acknowledged in construction SM process. In a project, the PMs heeded to the "*families and representatives of the ashes in the landscape"*, who demanded that the ashes of deceased relatives on the project environment should be protected and not disturbed (Yang and Shen, 2015). Such delicate issues are more profound in the construction industries of developing countries like Ghana. Construction projects in Ghana are characterized quite differently from the general case of developed countries. In Ghana, the land management and distribution system is under the pure control of traditional authorities who themselves are key stakeholders in project development

(Ubink, 2008; Dansoh et al., 2019). The 1992 Constitution of Ghana vests approximately 80% of land (customary land) in the appropriate skin, stool or land-owning family for the best interests of their subjects. Besides, there is a clear line of division drawn between politics and local traditional rulership to honour the "non-interference policy" in Ghana. However, these traditional authorities are key stakeholders who can wield absolute power and influence construction project development to a large extent in developing countries (Ezeabasili et al., 2015). This makes the traditional authorities very important and their cooperation is needed to ensure successful project delivery (Ubink, 2008; ECA, 2007).

In an instance, a public official of the Office of the Administrator of Stool Lands decided to seek legal redress for a suspicious "drink money" of 3 billion cedis (about 300,000 Euros then) that project developers had to pay traditional chiefs in honour of local custom. In respect of the "non-interference policy", "the government" stopped the public official from pursuing the case (Ubink and Quan, 2008). The implication is that projects cannot be undertaken without the developers paying such huge monies, which may not financially profit the projects. The monies that are "compulsorily" paid can have negative impact on project delivery. These sensitive issues ought to be appropriately incorporated into the SM process to ensure successful project delivery.

Given the aforementioned reasons, it is important for this research to focus on Ghana to reflect peculiar issues of SM in construction projects of less developed countries. The study seeks to offer a proactive and systematic approach that practitioners and decision-makers should implement to ensure that projects become more successful through external stakeholder cooperation and satisfaction. It is believed that the findings will be relevant toolbox for practitioners and decision-makers to responsibly engage ESGs and drive successful SM practice in construction project delivery.

1.3 RESEARCH QUESTIONS

Given the gaps in extant literature, the overall research question is: "*how can ESM and associated performance measurement be improved at the planning stage to enhance the success of construction project delivery in the GCI?"* It is therefore hypothesized that when the ESGs are properly managed and the associated performance is well assessed, upgraded, benchmarked and monitored, construction project delivery will become more successful in the GCI. The six sub-research questions for the study are outlined below:

1) What practices are presently adopted for ESM in construction projects of Ghana?
2) What main expectations do the ESGs pursue in project development in the GCI?
3) What are the obstacles hindering effective ESM at the planning stage of projects in the GCI?
4) What are the factors contributing to ESM success at the planning stage of projects in the GCI?
5) How should ESM performance at the planning stage of projects be assessed in the GCI?
6) What practical measures should be put in place at the planning stage of construction projects to properly manage multi-interests and relationships that will result in the achievement of mutual external stakeholder satisfaction in the GCI?

1.4 RESEARCH AIM AND OBJECTIVES

The study aims to develop a framework that will serve as an industrial guide for ESM practice and performance evaluation at the planning stage of construction projects.

This aim shall be accomplished through the objectives following;

1) Investigate the present practices of ESM in construction projects of Ghana.

2) Identify the main expectations of ESGs in project development in the GCI.
3) Investigate the obstacles inhibiting effective ESM at the planning stage of projects in the GCI.
4) Investigate the critical success factors for ESM at the planning stage of projects in the GCI.
5) Investigate the measures of ESM performance and how they should be quantified at the planning stage of projects in the GCI.
6) Develop and validate a framework for the best practice and performance appraisal of ESM at the planning stage of projects in the GCI.

1.5 RESEARCH METHODOLOGY

1.5.1 Overall Research Procedure

The study was undertaken in four main stages as illustrated in the Figure 1.1. At the Stage 1, initial literature was reviewed. Additionally, discourses with the supervisor, practitioners in the GCI and academics helped to establish the research questions, aim, objectives, methodology and approach.

At Stage 2, comprehensive literature review was conducted on research methodology and an appropriate research design was adopted. Afterward, general literature was reviewed on SM in related construction research. This revealed the stakeholder theories, stakeholder classification systems, stakeholder engagement, and SM processes. Further, literature was systematically reviewed on construction SM to establish the main subject areas covered, gaps and research propositions for this study. Moreover, project cases from Ghana and other developing countries were reviewed. Finally, literature covering ESG expectations, obstacles, success factors (SFs), and performance indicators (PIs) of construction SM was reviewed and sets of factors were identified through content analysis. The data sources include published conference and journal papers, published reports, unpublished thesis, and other related documents from research institutions and

industry organisations. The extensive literature review enabled the development of the data collection instruments and further review by experts before finalization. The objectives 1, 2, 3, 4 and 5 were partially fulfilled at this stage.

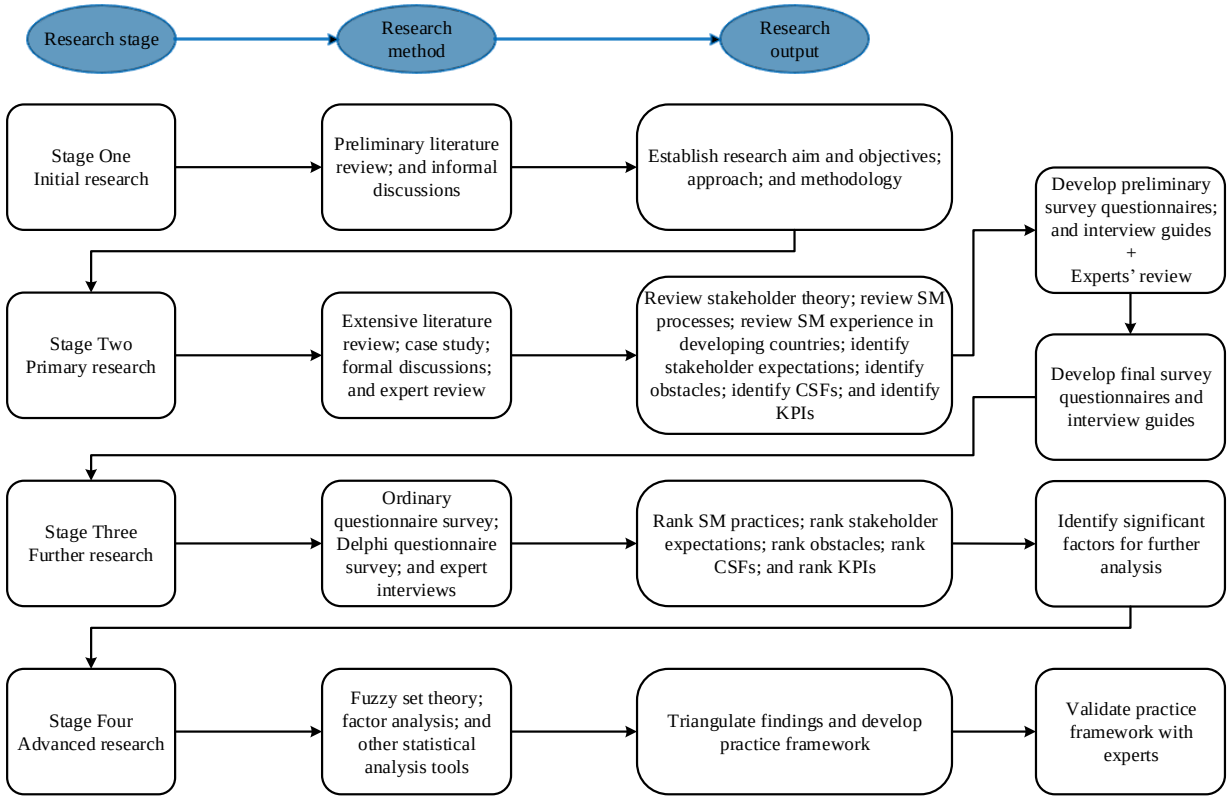

Figure 1.1 Adopted research procedure

Stage 3 covered primary data collection through ordinary questionnaire survey, Delphi survey (i.e. six rounds of questionnaire survey and interviews), case study and semi-structured interviews on industry practitioners in Ghana. The (identified) factors were ranked to further partially achieve the objectives 1, 2, 3, 4 and 5. The techniques adopted for acquiring and analysing data at this stage are detailed in Chapter 2.

At the Stage 4, the critical factors were additionally analysed (grouped and modelled) and the outcomes fully achieved the objectives 1, 2, 3, 4 and 5. The outcomes were then triangulated to

develop the framework aimed at ensuring improved ESM practice and assessment of associated performance level. Industrial guides and previous frameworks were considered to ensure that the resultant framework is not just theoretical but also applicable to real-time projects. Upon validating the framework with industry practitioners, the objective 6 was fully fulfilled. The data analysis techniques adopted for this stage are detailed in Chapter 2.

1.6 SCOPE OF THE RESEARCH STUDY

The research work was restricted in a few ways: (1) only construction ESGs are considered due to their significant impact on project success (Olander and Landin, 2005); (2) ESM process is considered at the PS because it is more critical than the other stages (Aaltonen et al., 2015); and (3) the findings are from the perspective of CCs who are significantly involved in ensuring effective planning, project success and mutual SS. The scope was defined by generally considering the time and resource constraints of the research. Overall, the research was basically focused on studying the management of ESGs at the PS of construction projects from the perspective of CCs.

1.7 STRUCTURE OF THE THESIS

The research aim and objectives set at the beginning of study are fulfilled and presented in different chapters of the thesis as briefly explained below.

Chapter 1 initiates the study by first explaining the key terms adopted in the study. Afterward, the research questions, aim, objectives, methodology and scope are delineated.

Chapter 2 covers the research methodology and methods employed in the study. The data acquisition methods and statistical analysis techniques used are also detailed.

Chapter 3 discusses previous research in construction-related publications. The stakeholder theory, stakeholder classification, stakeholder engagement, management process, major themes covered, gaps and propositions for this study are explained.

Chapter 4 presents literature on SM in Ghana and developing countries. Some project cases are reviewed to determine the stakeholder issues raised and how the organisations reacted. They provide the local context of SM in developing countries.

In Chapter 5, literature is reviewed on the expectations of ESGs, the obstacles inhibiting the effectiveness of ESM, SFs to produce or improve SM outcomes, and PIs to assess and benchmark SM performance in construction projects. Upon conducting content analysis on the germane literature, the identified lists of factors were conceptualised into the input-process-output model.

Chapter 6 focuses on interview findings on ESM practices in Ghana. Practices such as the identification, engagement and prioritization of ESGs in project are discussed. Besides, the expectations of ESGs, obstacles inhibiting ESM success, and factors contributing to success are covered. Thus, the interview results obtained for objectives 1, 2, 3 and 4 are sequentially discussed in Chapter 6.

Chapter 7 presents the empirical findings from ordinary questionnaire survey on the expectations of ESGs, obstacles inhibiting ESM success, and factors contributing to the success of ESM in the GCI. In Chapter 7, the empirical outcomes of objectives 2, 3 and 4 are discussed in sequence.

Chapter 8 presents the detailed approach for assessing the performance level of ESM (i.e. mutual external SS) through Delphi survey. The most important KPIs are shortlisted, quantitative indicators (QIs) are established for the respective KPIs, and the quantitative requirements (QRs)

are defined for the QIs using FST approach. A case study is further carried out to test the assessment model on real-time project in Ghana. The objective 5 is fulfilled in this Chapter.

In Chapter 9, a resultant framework is developed and validated for ESM practice and performance appraisal in construction projects of Ghana. This Chapter also fulfils the objective 6 of study.

Chapter 10 basically concludes the thesis. The six objectives are reviewed, conclusions are drawn, value and significance are stated, limitations are discussed, and recommendations are made for future studies.

1.8 SIGNIFICANCE AND VALUE OF RESEARCH

SM is considered to be crucial in contemporary project management but has been inadequately explored in current research. SM in developing countries (e.g. Ghana) has been practised on spontaneous basis, often with no clear-cut practical framework, and giving very minimal consideration to ESGs particularly. The resultant validated framework from the study will provide reliable guidance for the management of ESGs in construction project development. Thus, it will provide an avenue for the ESGs to be given adequate consideration by including them in the project objectives and activities. Subsequently, it will help curtail a lot of conflicts in construction project development. Moreover, ESM performance could be reliably and objectively assessed, benchmarked, monitored and upgraded. This will inform decision-makers and practitioners on the areas that require improvement. It will further help to substantiate the reliable use of mutual SS as a key evaluation dimension of project success in the construction industry. Altogether, the research outcomes are expected to provide theoretical and practical guidance for effective ESM which will culminate in improving construction project planning and delivery.

1.9 CHAPTER SUMMARY

Chapter 1 presented a general introduction of the research study, and covered (1) definitions; (2) background of research; (3) research questions; (4) aim and objectives; (5) research methodology; (6) approach of research study; (7) structure of thesis; and (8) significance and value of research. Following the introduction chapter, Chapter 2 covers the methodology of research.

CHAPTER 2 RESEARCH METHODOLOGY

2.0 INTRODUCTION

In Chapter 1, the introduction of thesis was presented. In this chapter, the methodology of the study is discussed in two main areas. The first area covers detailed description of the research concepts open to the researcher to choose from. The second area is about the description of the specific methodology adopted for this study in terms of methods for sampling, data acquisition, statistical analysis and model development. The most suitable research methodology was adopted based on the research design for this study.

2.1 RESEARCH DESIGN CONCEPTS

Diversity of research design frameworks, with strengths and weaknesses, have been outlined in literature to aid the researcher in conducting good research that appropriately answers the research questions. A researcher can either adopt one research design framework or use a combination, whichever is the most appropriate (Blaikie, 2007). However, the research problem should be the kick-starter instead of the research methods so that the most fitting approach could be adopted (Morgan, 2007). Among the different research design frameworks, the components of the "research onion" are more comprehensive and adopted in this study (Molwus, 2014) (Figure 2.1).

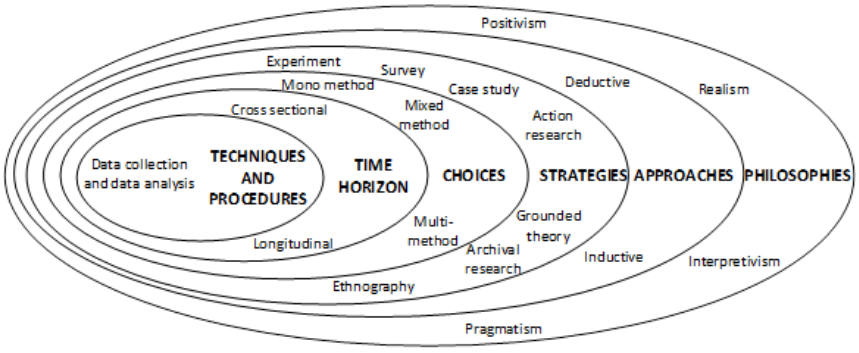

Figure 2.1 The research onion

Adopted from Saunders et al. (2009)

2.1.1 Research Philosophy

The research philosophy is about the manner in which things in the world are perceived (Yin, 2009). It addresses the assumptions underlying chosen research strategy and methods forming part of a research paradigm. The research philosophy is founded mainly on ontology, epistemology, axiology and pragmatism (Saunders et al., 2009). Ontology makes claim of what knowledge is (Blaikie, 2007). Also, epistemology is perceived as what acceptable knowledge in a particular study area is made up of. Besides, axiology is about the role values play in the choice of research design and value judgment. Moreover, pragmatism sees the research questions as the most important determiners of the suitable knowledge claim choice, especially if it is not clear whether an interpretive or positivist philosophy should be adopted for the inquiry (Saunders et al., 2009). A synopsis of the philosophical positions is shown in Table 2.1.

2.1.2 Research Approaches

The foundational blocks or approaches of every research work are classified into deductive and inductive reasoning (Figure 2.1) (Sekaran, 2003; Saunders et al., 2009). Deductive reasoning focuses on testing existing theories by identifying explicable regularities, constructing theories, deducing and testing the hypotheses by matching with empirical data (Blaikie, 2007; Sekaran, 2003). The purpose is to validate or invalidate existing theories. Under inductive reasoning, the researcher observes a certain phenomenon and logically arrives at a universal generalisation based on the explicable patterns in empirical data (Sekaran, 2003; Saunders et al., 2009). The researcher is only able to comprehend, explain, or predict phenomena when the associated theories are based on inductive or deductive reasoning (Sekaran, 2003). The research approaches are also instead referred to as quantitative and qualitative (deductive and inductive respectively), and mixed approach where the two are combined (Creswell, 2009).

Table 2.1 Comparison of the branches of research philosophies

	Positivism	**Realism**	**Interpretivism**	**Pragmatism**
Ontology: the researcher's perspective of the nature of reality or being	External, objective and does not depend on the social actors	Objective. Does not depend on human thoughts and knowledge of their existence (realist), but rather, it is interpreted through social conditioning (critical realist)	Socially constructed, may change, multiple	External, multiple, view chosen to best enable answering of research question
Epistemology: the researcher's view of what constitutes acceptable knowledge	Only observable phenomenon could make available credible data and facts. Focuses on causality and law like generalisations, reducing phenomenon to simplest components	Observable phenomenon provides credible data and facts. Inadequate data means inaccuracies in sensations (direct realism). Alternatively, phenomenon creates sensations that are open to misinterpretation (critical realism). Focuses on explaining within context(s)	Subjective meanings on social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivating actions	Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focuses on applied research, integrates different views to help interpret the data
Axiology: the researcher's perspective on the roles of values in research	Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance	Research is value laden; the researcher is biased by world views, cultural experiences and upbringing. These will impact on the research	Research is value bound, the researcher is part of what is being researched, cannot be separated and so will be subjective	Values play a large role in interpreting results, the researcher adopting both objective and subjective points of view
Data collection techniques most often used	Highly structured, large samples, measurement, quantitative but can use qualitative	Methods chosen must fit the subject matter, quantitative or qualitative	Small samples, in-depth investigations, qualitative	Mixed or multiple methods designs, quantitative and qualitative

Source: Adapted from Saunders et al. (2009)

2.1.3 Research Strategies

The researcher is open to seven different research strategies to address the research questions and objectives (Figure 2.1). A combination of such strategies may be appropriate for the same research especially when triangulation of outcome is required. The seven strategies are explained below.

2.1.3.1 Experimental Research

Experiment answers the questions "how" and "why" effectively in explanatory and exploratory research as it can explain the interrelationships among variables (Saunders et al., 2009). The advantages are the ease of replication and comparatively lower time and cost investments. The weaknesses include its ability to test limited number of hypotheses effectively at a time (Neuman, 2003).

2.1.3.2 Survey Research

Survey produces numerical results in terms of inferential and descriptive statistics about the beliefs, views, demographics, trending behaviour, expectations and knowledge of the target population (Neuman, 2003; Saunders et al., 2009). It attempts to answer the questions "who", "what", "where", "how much", and "how many" about the phenomenon under study (Saunders et al., 2009). The survey strategy enables the testing of multiple hypotheses through a single survey. The survey data collection may come in the form of structured observation, questionnaire, and interviews (Saunders et al., 2009; Newman, 2006). Advantageously, a representative sample data could be collected in highly economic manner (Fellows and Liu, 2003).

2.1.3.3 Case Study

Case study is engaged to "dig deep" into a particular case. The case data may be collected using complementary procedures including interviews, questionnaires, observations and archives. The researcher intends to answer "why", "what", and "how" about the problem under study in an exploratory and explanatory manner to propose or test theory (Saunders et al., 2009). Case studies may be classified into single case and multiple case, or holistic case and embedded case, in line with the number of cases or the unit of analysis adopted respectively (Yin, 2003).

2.1.3.4 Action Research

Action research is considered a reflective process whereby the researcher involves in a team or community of practice to progressively enhance the problem-solving mechanisms to the benefit of the focal organisation or team (Easterby-Smith et al., 2002). The strengths include the focus on change, commitment towards detecting problems, planning, undertaking actions, assessing, and including professionals across the entire process (Saunders et al., 2009; Fellows and Liu, 2003).

2.1.3.5 Grounded Theory

This research strategy involves systematically deriving general and abstract theory about an action, process or interaction which is grounded on respondents' opinions from data collected, refined in multiple stages, and interrelated from different data categories (Strauss and Corbin, 1990; Creswell, 2009). It has the potential of reducing the similarities and differences in information through theoretical sampling of the different dataset and comparison with emerging categories (Strauss and Corbin, 1990).

2.1.3.6 Ethnography

The ethnographer seeks to study the problems or phenomena in the natural, social and cultural context by living among the people (Oates, 2006; Saunders et al., 2009). In order to be successful with this strategy, the ethnographer must initially identify a proper setting, gain the peoples' trust, and spend much time to adequately answer the research questions (Saunders et al., 2009).

2.1.3.7 Archival Research

This strategy explores, describes or explains archival data from sources such as administrative records and documents. It is used to trace and describe an occurrence or the pervasiveness of a certain phenomenon, or to predict outcomes of events (Berg, 2007; Saunders et al., 2009).

2.1.4 Research Choices

The (detailed) research choices are illustrated in Figures 2.1 and 2.2. The researcher is required to choose from mono method, mixed methods and multi-method to appropriately address research questions. The mono method involves the use of one method to acquire and analyse data. In the case of multi-method, the researcher employs multiple quantitative or qualitative procedures separately to collect and analyse data in a single research design. Also, the mixed methods involve the complementary utilization of qualitative and quantitative procedures to collect and analyse data either concurrently or successively in a single research design. Moreover, a mixed-model researcher complementarily uses both procedures and techniques, and can further convert qualitative data to numerical codes for statistical analysis, or convert quantitative data into narrative for qualitative analysis, in a single research design (Saunders et al., 2009).

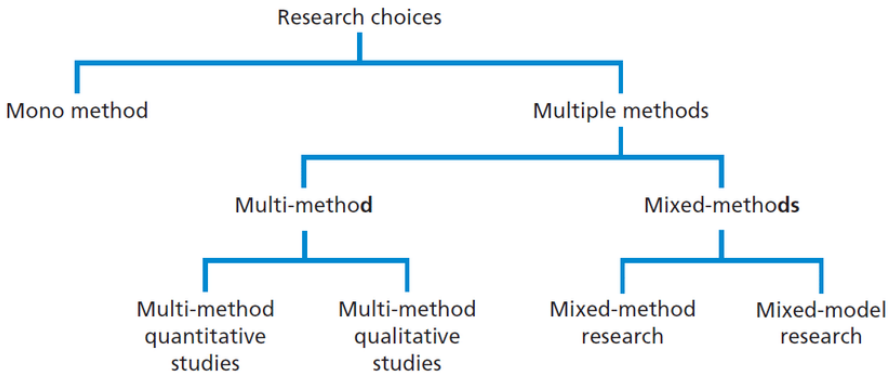

Figure 2.2 Research choices

Adopted from Saunders et al. (2009)

2.1.5 Time Horizons

The time horizons (dimensions) are shown in Figure 2.1. The two research time dimensions are cross-sectional and longitudinal. The cross-sectional dimension takes a snapshot of a phenomenon

at a specific point in time whiles the longitudinal dimension studies a phenomenon over a specified duration to be able to realise trends (Sekaran, 2003; Saunders et al., 2009).

2.1.6 Techniques and Procedures

The data collection techniques and corresponding analytical tools in research design are subject to the nature of the research problem (Figure 2.1) (Saunders et al., 2009). Some of the data collection techniques include questionnaire survey, interviews, etc.

2.2 RESEARCH DESIGN FOR THIS STUDY

A summary of the adopted research design is shown in Table 2.2. The overall research question for this study is "*how can ESM and associated performance measurement be improved at the planning stage to enhance the success of construction project delivery in the GCI*?" Considering the different sub-questions that the research intends to answer, the pragmatic knowledge claim is considered the most relevant research philosophy in this context. Except the objective 1 which engaged only qualitative data (interviews), the other objectives adopted concurrent mixed methods to complementarily address the research questions. The data for the study was collected using survey and case study strategies. Many scholarly works in the SM field often made use of these strategies to ably capture intricate issues in the PSE (Yang and Shen, 2015; Thekdi and Lambert, 2014; Olander and Landin, 2008). The research questions and objectives do not pose any restraints on the applicable time horizons. The researcher adopted the cross-sectional time horizon as the intention is not to study the phenomenon over a duration. The data collection instruments used are ordinary questionnaire survey, interview, Delphi questionnaire survey, and case study.

Table 2.2 Summary of the study's research design

Research design layers	Selected option(s) for this research
Philosophy	Pragmatism
Approaches	Deductive and inductive
Strategy	Survey and case study
Choices	Mixed methods
Time horizon	Cross-sectional
Techniques and Procedure	Ordinary questionnaire survey, Delphi questionnaire survey, interview, and case study. Data analysed statistically and with content analysis.

2.3 RESEARCH PROCESS

The adopted research process is presented in Figure 2.3. The methods for collecting data and analytical techniques used to address each research objective, as well as the corresponding research outputs are summarized. At the initial level, the researcher comprehensively reviewed literature from journal articles, books, and theses to analyse stakeholder practices, the trend of research, and subject coverage in order to identify the relevant research gaps. The review enabled the researcher to define the theoretical framework to guide the study.

Objective 1 attempts to investigate the general ESM practices that are currently adopted in the industry. Literature was reviewed from institutional and academic publications and analysed based on the content. Interviews were also conducted with experienced CCs on the current status of these practices such as identification, analysis and prioritization of ESGs and their expectations, and the strategies adopted to manage the same. This is very important to guide the researcher in developing an improved practice framework for ESM in the GCI.

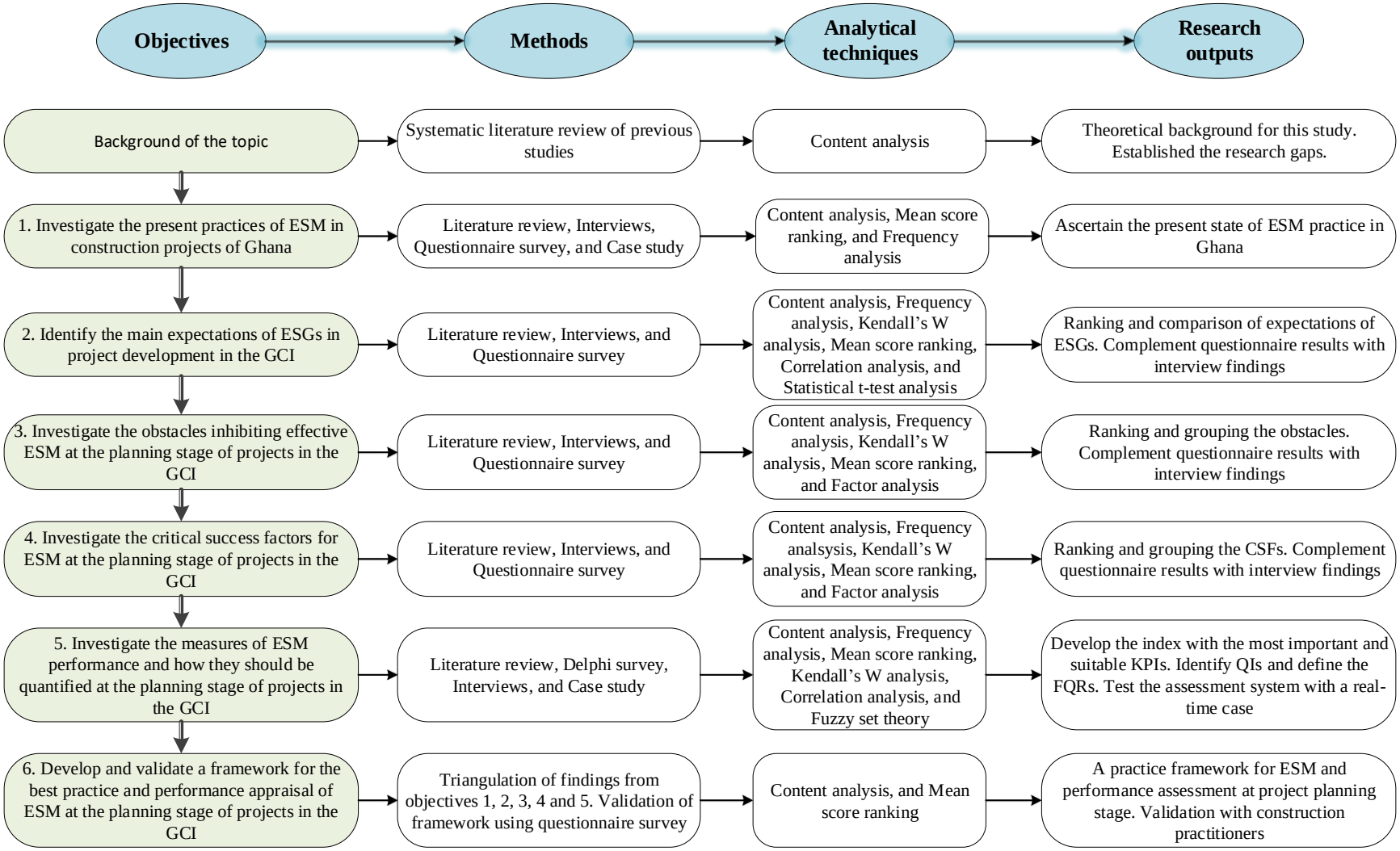

Figure 2.3 Research process for this study

Analysing the comprehensive germane literature and conducting subsequent questionnaire survey and interviews with CCs revealed the expectations of ESGs, critical obstacles and CSFs of ESM to fulfil objectives 2, 3 and 4 respectively. The objective 5 on ESM performance assessment was achieved through analysis of comprehensive literature, interviews, six rounds of Delphi survey, and case study. These methods resulted in the establishment of ESMPI and the associated QIs and FQRs. The ESM performance assessment system was tested on real-time construction project case to measure the corresponding performance. The objective 6 was achieved through triangulation and content analysis of the outcomes of objectives 1, 2, 3, 4 and 5. The resultant framework was validated with experienced practitioners to be suitable and applicable in the GCI.

2.4 DATA ACQUISITION METHODS

Fellows and Liu (2003) opined that the researcher has to consider the desired scope and depth of study prior to selecting appropriate research methods. The adopted methods for acquiring data are illustrated in Figure 2.4. The scope of coverage is represented by the diameter of the circles comparatively. When viewed as a pyramid, the depths of the methods increase from comprehensive literature review to case study. The combination of these methods to acquire data is suitable due to the diverse issues investigated about ESM in the GCI.

2.4.1 Comprehensive Literature Review

Through literature review, the researcher is able to consolidate previous works about a specific subject area in order to establish the theoretical ground for the subsequent study (Chow, 2005). The germane literature on SM was reviewed from academic journals, books, doctoral theses, conference papers, institutional reports, and internet information. The review was undertaken in three parts. The first part (Chapter 3) covers the evolution of stakeholder theory, SM processes and

practices, and systematic analysis of past studies to identify the relevant gaps. The second part (Chapter 4) entails SM practices in Ghana and other developing countries. The final part (Chapter 5) presents the ESG expectations in construction projects, and the obstacles, CSFs and KPIs of ESM in construction projects.

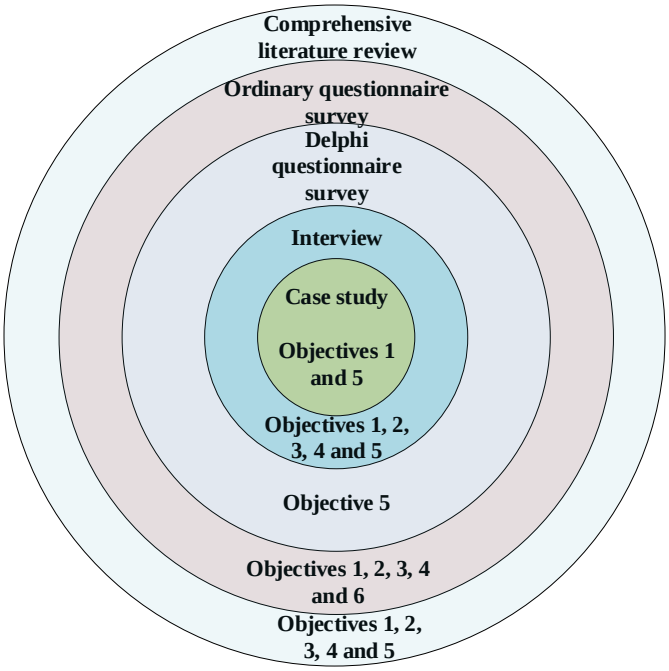

Figure 2.4 Adopted data acquisition methods

2.4.2 Ordinary Questionnaire Survey

Questionnaire surveys are commonly used in CEM research for collecting large sample size quantitative data. Studies including Yang and Shen (2015), Yang et al. (2010), Doloi (2012), Tam and Tong (2011), Wei et al. (2016), Li et al. (2012a) and Leung et al. (2004b) used questionnaires to elicit the views of qualified persons on the SM subjects researched. Similarly, CCs were required to evaluate questionnaires on the expectations of the ESGs, obstacles, CSFs and the resulting framework for effective ESM in construction projects. This partially fulfils objectives 1, 2, 3, 4 and 6 (Figures 2.3 and 2.4).

2.4.2.1 Questionnaire Design

Lists of factors were generated through content analysis of reviewed germane literature. The identified factors were consolidated into an initial questionnaire draft and pilot-tested on five SM experts with substantial academic and/or industry experience; two from Ghana and the others from Sweden, Hong Kong and Australia. They were selected based on related publications (Widén et al., 2014; Walker et al., 2008; Lichtenstein et al., 2013) and their contributions toward the development of the local GCI. The reason for the pilot-testing was for the experts to review the appropriateness of the questionnaire in terms of phrasing and structure of questions, comprehensiveness and applicability of factors in the local context, and the duration for completion. Upon the considered revision, the final version of the questionnaire was organised into Sections A, B and C (Appendix I). Section A covers the general background information of the responding CCs. Section B investigates the current state of ESM practice in the GCI. Section C was further structured into four parts: Part 1 requires the CCs to compare the ESGs based on stated attributes; Part 2 requires the CCs to express perceptions on the degree to which they disagree/agree that the consolidated expectations apply to each ESG; Part 3 requires the CCs to rate the ESM obstacles in terms of the level of criticality; and Part 4 requires the CCs to rate the level of importance of the CSFs for ESM in projects.

The 5-point Likert scale was consistently used in the questionnaire survey and the definitions are indicated in Tables 2.3 and 2.4. The 5-point rating scale adopted ensures simplicity and brevity of collecting responses, facilitates respondents from different backgrounds to fill (Li et al., 2012a), produces meaningful and reliable results from survey (Garland, 1991), and it is very common in CEM research (Yang and Shen, 2015; Yang et al., 2010; Li et al., 2012a; Toor and Ogunlana, 2008; Tang and Shen, 2013; Masrom et al., 2013).

2.4.2.2 Why Construction Consultants Are the Focus in this Study

A typical project team is constituted by the client, consultant and contractor organisations who share ideas, skills and resources to accomplish the requirement of construction projects. The three parties collaborate extensively to get a construction project delivered and operated across its lifeline. However, the extent of collaboration and contribution of the individual parties to the project development and management process may vary across the different stages of project. For instance, the client, project management organisation, project consultant, and design organisation are the parties who take the main responsibility for leading SM at the construction project inception stage. Furthermore, the design organisation and project management organisation lead the SM process at the construction project design stage (Molwus, 2014). Apparently, the CCs have greater responsibility in managing ESGs across the PS than even the client. Therefore, it can be generally inferred that the project parties may be of unequal relevance at the PS for managing ESGs in project development.

Scholarly works have been advocating for the early involvement of contractors in project planning to improve project deliverables (Song et al., 2009; Molenaar et al., 2007). However, the contractor organisations seem to be less relevant in managing ESGs at the project PS (Molwus, 2014). This fact confirms the argument that the contractors do not have the required experiences and knowledge to be involved at the PS (Love et al., 2014). Meanwhile, the traditional project delivery system is dominantly preferred to the alternative systems in the GCI and other developing countries (Jaafar and Radzi, 2013). The traditional system was inherited from the British during the colonial era and became popularly applied in the GCI. The popularity is due to the history of Ghana, familiarity and commonness among client organisations, transparency, and nature of project environment (Ren et al., 2012).

The study focuses on ESM from only the managerial perspective due to time and resource limitations, and hence, it excludes responses from other stakeholders like the pressure groups. Thus, the respondents are required to draw from their rich managerial experiences and perspectives to inform their opinions on the problem under investigation. The study considers the CCs to be the most appropriate practitioners who may have a greater hand in managing ESGs at the PS of construction projects. At the early stages of typical traditional project delivery system, the client appoints the CCs to undertake extensive planning. The CCs represent and coordinate with the client to produce drawings, and devise plans and strategies to monitor and deliver projects successfully. They may also conduct external stakeholder consultation exercises on behalf of the client to better plan and implement the project. Therefore, they are more directly and significantly involved in managing the ESGs, multi-interests and interrelationships during project planning. The CCs are usually architects, engineers, project/construction managers and quantity surveyors in the GCI. Due to the immense involvement of the CCs in project management at the PS, it is believed that their experiential knowledge and perceptions are appropriate for this study and may yield a representative analysis which is generalisable across the entire profession or even industry.

2.4.2.3 Respondents Selection

In consonance with Babbie (1990), sampling is regarded as a vital consideration in this research due to time and cost limitations. This study only considers the CCs who are essentially practicing project/construction managers, architects, quantity surveyors, and engineers. In the GCI, there is no singular consolidated list of individual CCs or operating consultancy firms. A random sampling method was not feasible in this study since the sampling frame is indefinite. In such a case, the non-probability sampling is the most appropriate method to reach a representative sample (Patton, 2001). The CCs were identified based on their practicing experience and availability to participate

in the study (Wilkins, 2011). They have general knowledge and understanding about SM in construction projects. Accordingly, two non-probability sampling approaches were applied to improve the sample size: the purposive and snowball sampling approaches (Zhang et al., 2011; Moglia et al., 2009; Ameyaw, 2015). First, an initial list of CCs specifically was obtained by similarly contacting the listed organisations (Section 2.4.3.1) and many other private firms operating in the GCI. Second, lists of practitioners were obtained from professional bodies comprising the Ghana Institute of Construction, Ghana Institution of Surveyors, Ghana Institute of Engineering, and Ghana Institution of Architects. These lists were incomplete as some practitioners were registered with other bodies like RIBA and RICS. Hence, the initially identified CCs were also asked to recommend other known practitioners or colleagues in the GCI. Based on these approaches, a sorted and compiled list of CCs was identified from the GCI to become potential respondents through survey. The contact information of the practitioners was identified from project documents, websites, and colleagues. The process is believed to have yielded adequate potential respondents for the survey in Ghana. Subsequently, the ordinary questionnaire survey was conducted on 263 CCs who were identified through the random sampling technique.

2.4.3 Delphi Survey Technique

The Delphi survey technique is highly valuable and widely applied in collecting empirical data from experts about complex CEM subjects. It is undertaken by means of multiple iterations, which attempt to greatly exclude biases and essentially build consensus on opinions (Chan et al., 2001; Yeung et al., 2007). It is essential where there is limited knowledge on the problem and/or when collective problem solving is required (Skulmoski et al., 2007). As such, the technique was engaged to obtain highly unbiased consolidated opinions of experts (CCs) in multi-rounds interspersed with controlled feedback and group opinions, and the outcomes of preceding rounds

fed into the subsequent round to develop the ESM performance assessment system (Linstone and Turoff, 1975).

Apart from the Delphi method, other similar methods could be engaged to elicit the opinions of experts. These methods include nominal group technique (NGT, or brainstorming NGT, or estimate-talk-estimate), staticised groups, and focus groups (Hallowell and Gambatese, 2010). The NGT creates a platform for biased results and conformity pressure as feedback is facilitated through face-to-face discussions among experts (Erffmeyer and Lane, 1984). The staticised groups method also discourages interactions among the panel of experts as there is no feedback or iteration process. Aside, the focus groups method is financially and logistically challenging, and the opinions of the more powerful experts are likely to dominate the discussions (Hallowell and Gambatese, 2010).

Delphi survey technique has proven advantageous over other methods such as NGT, staticised groups, and focus groups (Hallowell and Gambatese, 2010). Martino (1973) stated that Delphi technique is fit for enquiries where there is inadequate historical and quality data, and alternate methods are not applicable. Performance assessment of construction ESM is lacking in research. Therefore, the Delphi technique is best suited to help solve the subjective assessment problem of SS in construction projects. The special features of Delphi technique include; (1) self-validation process through multi-rounds of survey; (2) ability to rigorously solve complex problems using opinions and judgments of experts; (3) eradicating biasing effect of dominant experts, unnecessary interactions, and conformity pressure (through selection of diverse, well-rounded and well-qualified experts); (4) confidentiality is enhanced by geographic distribution of experts, where face-to-face interactions are avoided through direct email/information exchanges between researcher and individual experts; (5) preserved heterogeneity of experts ensures validity of

outcomes; and (6) flexibility of using diverse statistical techniques for objective analysis (Hallowell et al., 2011; Sourani and Sohail, 2015; Hallowell and Gambatese, 2010; Xu et al., 2010; Dickey and Watts, 1978; Ameyaw, 2015).

Meanwhile, the setbacks of Delphi technique include challenges of determining the minimum panel size and reaching consensus through attaining and maintaining high response rate across the multiple rounds (Robinson, 1991; Hsu and Sandford, 2007). Other setbacks include poor results due to careless execution, poor questionnaire design, inappropriate selection of experts, analysis of invalid and unreliable results, low value of feedback and consensus, inconsistency of the expert responses between sequential rounds, and altogether, the unscientific characterization of the Delphi process (Sackman, 1974; Gupta and Clarke, 1996). However, strategies were enforced to help overcome such setbacks and obtain unbiased information from the panellists (Section 2.4.3.2).

2.4.3.1 Expert Panellists and Selection Requirement

In conducting Delphi survey, the validity and credibility of the study and the ultimate results are greatly contingent on the researcher carefully, precisely and objectively identifying and selecting the panellists (Jacobs, 1996; Hsu and Sandford, 2007; Hallowell et al., 2011). A qualified expert would usually be an individual with substantial knowledge and/or practical experience, and also willing and ready to review preceding opinions so that consensus could be reached (Hsu and Sandford, 2007). Particularly, an expert is a holder of position in professional organisation, demonstrates extensive skills and experience through leadership in the organisation, published on related topics of problem under study, or has presented at national convention (Cabaniss, 2002).

Two approaches were followed in forming the expert panel. First, through a purposive sampling approach, an initial list of potential experts was drawn from the industry. Invitation letters were

sent to the targeted private and public organisations with interest in construction project development, requesting their assistance for data collection. The recipients were asked to nominate qualified CCs who work within or with their organisations on projects following the predefined criteria (Manoliadis et al., 2006; Chan et al., 2001; Yeung et al., 2007). Second, the researcher used snowballing approach to opportunistically ask the initially identified experts to recommend other potential experts (Moglia et al., 2009). Formal letters were then delivered to the suggested experts to seek their consent on participation. The required expertise includes the roles of practitioners in their respective organisations and the following pre-defined criteria which were adapted from similar CEM studies (Yeung et al., 2007; Ameyaw and Chan, 2015; Hu et al., 2016): (1) "knowledge and in-depth understanding of the SM concept", (2) "current/recent practical experience in construction SM" and (3) "extensive involvement in construction project management generally".

The practitioners were selected as "qualified experts" subject to their leadership roles in their organisations and meeting the above criteria. Aside, more than five years related experience was set as the cut-off point for expert inclusion in the panels. Hence, those identified experts who could not meet the more than five years related experience criterion were excluded from the panels. The panels are generally best described as composed of experienced consulting professionals who are middle-level and upper-level decision-makers in the GCI (Esmaeili and Hallowell, 2013).

Substantial effort was put in place to identify and select experts across numerous private and public organisations. Moreover, the experts have diverse backgrounds and levels of experience, which ensure appropriate expert representation and balance (Powell, 2003). The public organisations approached include major Metropolitan and Municipal Assemblies; Building and Road Research Institute, Kumasi – responsible for tailoring diverse research and development activities to national

needs; Ministry of Roads and Highways, and the subsidiary departments including Department of Urban Roads, Ghana Highway Authority, and Department of Feeder Roads– responsible for managing (administering, planning and controlling) the development of all road and transport projects; and Ministry of Water Resource, Works and Housing, and subsidiary departments including the Ghana Water Company Limited, Architectural and Engineering Services Limited, Public Works Department, Tema Development Corporation, State Housing Company, and Hydrological Services Department– responsible for managing water supply services, and general construction and civil engineering projects. The private organisations contacted also include ABP Consult Limited and Consortium Limited.

The wide backgrounds, experiences and organisations of the identified experts assured that the feedback and outcomes of the study are reliable and credible. Furthermore, the distribution of experts is believed to indicate that the panels represent balanced pools of judgements/opinions.

2.4.3.2 Number of Rounds, Attrition Rates, and Format of Survey

The desired degree of convergence and increasing accuracy through iterative feedback are the reasons underlying the number of Delphi survey rounds (Hsu and Sandford, 2007; Hallowell and Gambatese, 2010). Usually, Delphi surveys in CEM research take between two and six rounds for the experts to reach desired level of convergence, and thus, terminate the iteration (Ameyaw et al., 2016). It is however recommended for the researcher to be cautious of participant fatigue, rate of attrition, and resource constraints whiles going beyond three rounds (Hasson et al., 2000). On these premises, the Delphi survey in this study was separated into two main parts. Part 1 helped to establish the ESMPI through three rounds of questionnaire survey. Following, Part 2 helped to develop the QIs and FQRs through another three rounds of questionnaire survey. In total, a six-round questionnaire survey was conducted and interspersed with semi-structured interviews

between the two parts. Because of the difficulty in maintaining one set of panel experts throughout this Delphi process, and the possibility of wasting experts' time and stopping prematurely (Hasson et al., 2000; Hon et al., 2011), two different panels of experts were formed for the two parts of Delphi survey. The Delphi process adopted for this research is illustrated in Figure 2.5. The experts were required to assign ratings to the importance, obtainability, measurability, and performance levels of the KPIs, QIs and QRs based on five-point unipolar and bipolar scales. It is believed that the five-point scale is most appropriate for collecting qualitative data in this instance as scales with values above 7 could render the instrument confusing, extend completion time, and reduce expert participation in survey (Close and Loosemore, 2014). The adopted scales facilitated data collection and made the data suitable for diverse statistical analysis to produce credible and reliable results.

Measures were put in place to ensure that the Delphi process went on smoothly to surmount the limitations identified in literature (see Section 2.4.3). These measures are outlined below:

1. The identified and qualified experts were broadly educated on the background information about the research and requested to make time commitment where feasible. The background information detailed out the purpose and scope of study, expected contribution and benefits of the study, explanations of the technical terms and KPIs, and the number of rounds required (Ameyaw, 2015).
2. The researcher kept close contact with the experts and ensured that communication with them was simple, clear and unambiguous. This expectedly resulted in high response rates and minimized attrition rates (Moglia et al., 2009). Moreover, interested experts were updated with progress report on the study. Through the updates, the experts also provided informal advices to improve the work (Ameyaw, 2015).

3. The survey questionnaires were designed to be simple and well-understood, and the interview sessions were semi-structured to facilitate contributions by the experts. The length of questionnaires was reasonable and took about 15 minutes to complete in each round. This ensured high response rates and prompt response of the experts (Hallowell and Gambatese, 2010).

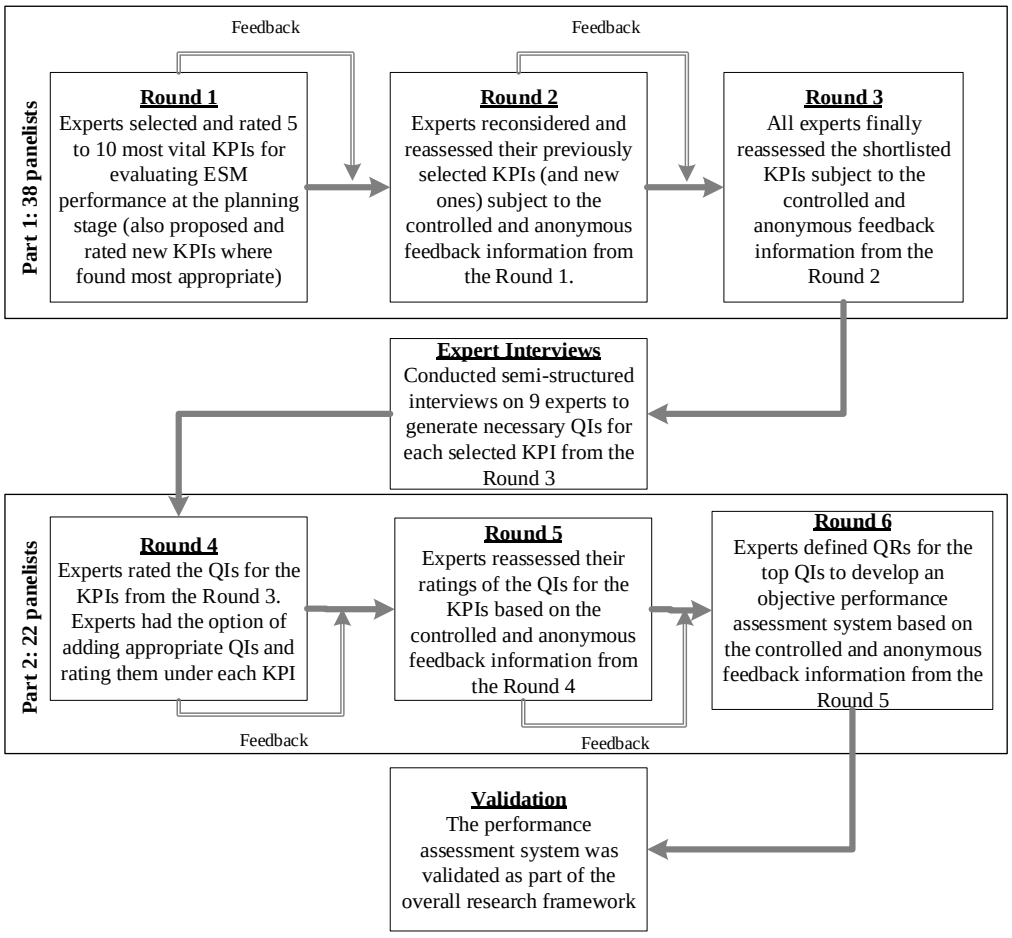

Figure 2.5 Delphi survey process

4. The initially drafted questionnaires were pilot-tested on five experts with substantial experiences in construction SM (Section 2.4.2.1**).** The experts were required to assess the questionnaires' appropriateness in terms of comprehensiveness, clarity of expressions

(particularly, definitions of factors), logical sequence, and duration of completion. The recommendations of the experts were fed into the final versions of questionnaires.

5. The experts were given two weeks deadline to complete and return the questionnaires in each round. Through systematic follow-ups in terms of phone calls, emails and personal visits, the experts who were not able to respond on time were reminded to complete the questionnaire before the deadline (Chan et al., 2001; Yeung et al., 2007). This also facilitated the response rates and promptness of experts.
6. Due to the problematic nature of conducting survey in developing countries like Ghana, a mixed approach was adopted to facilitate the Delphi survey process. The survey was conducted by administering questionnaires personally, emailing, and personal interviews based on the geographic distribution and preferences of the experts to optimize the advantages of the different approaches (Ameyaw, 2015).
7. Statistical feedback (frequencies, mean score values and Kendall's *W*) from previous survey were fed into the succeeding survey and made available to the experts promptly to sustain their interest (Chan et al., 2001; Yeung et al., 2007; Hallowell and Gambatese, 2010; Ameyaw, 2015). The feedback system led to improvements in the judgements of experts and minimized inherent biases.
8. In order to ensure smooth transition between the two parts of the Delphi process, the second panel experts were well educated on the prior rounds and the results obtained. This ensured that the second panel experts were able to provide contributions that complemented the group opinions of the first panel experts.

2.4.3.3 Number of Experts on the Delphi Panels

The need to select appropriate number of panellists has been highly acknowledged in CEM research (Ameyaw et al., 2016). However, no specific number of experts has been widely accepted in literature as the optimal size of Delphi panels. This is because factors including the amount and depth of data required, constraints of cost and time, and expert availability and willingness could affect the panel size (Linstone and Turoff, 1975). Meanwhile, the accuracy and credibility of the outcomes tend to increase where the number of Delphi panel experts increases (Murphy et al., 1998). Delphi panel sizes in CEM research are found to range from 3 to 93 experts, with over 90 percent of studies using up to 40 panellists (Ameyaw et al., 2016). Similarly, the initial three rounds aimed at developing the ESMPI with 38 experts, whiles the last three rounds focused on establishing the QIs and corresponding QRs with 22 experts. In order to minimize attrition, which is experienced by experts usually after three rounds, and improve the response rate and timing (Hasson et al., 2000), new experts were similarly identified and qualified into the second panel for the last three rounds of the Delphi survey (Section 2.4.3.1).

2.4.3.4 Delphi Survey Objectives

The Delphi survey was mainly focused on the objective to "investigate the measures of ESM performance and how they should be quantified at the planning stage of projects in the GCI". ESM performance assessment is a less-studied subject in CEM research. Therefore, it is important to engage a methodology that seeks to explore factual information from the experiences and expertise of the professionals. On this premise, the Delphi survey method was adopted to fulfil this objective given the flexibility and numerous benefits as discussed earlier (Section 2.4.3). The objective was achieved by developing the ESMPI, QIs and FQRs sequentially. This ensures that ESM performance could be measured, monitored, upgraded, and benchmarked quite objectively and

reliably in project development (Yeung et al., 2009a). Due to the exploratory nature of the objective, the experts were required to complete the series of questionnaires not based on a single project but rather with reference to their professional and experiential knowledge in project SM.

2.4.3.4.1 Structure of the Questionnaires and Interview

In total, six different questionnaires and one set of interviews were conducted throughout the Delphi survey process (Figure 2.5). These are explained below (Appendices II-VIII);

1. In the Round 1 questionnaire, the 22 identified PIs with explanations were provided and the experts were required to select and rate 5 to 10 top KPIs that will be useful in evaluating ESM performance at the PS of construction projects. The experts had the option of adding and rating new factors which are more appropriate.
2. The Round 2 questionnaire required the experts to reconsider and reassess the KPIs subject to the provided feedback information from Round 1.
3. The Round 3 questionnaire required the experts to finally reassess the shortlisted KPIs from the previous round based on the feedback information. The above initial three rounds enabled the development of the ESMPI at an acceptable expert consensus.
4. One-off interview sessions were conducted with nine experts to preliminarily validate the developed ESMPI and also generate the relevant QIs to evaluate each shortlisted KPI. The experts were required to propose at least two QIs by which each KPI could be measured, and comment on the importance, measurability and obtainability of such QIs.
5. The Round 4 survey required the experts to assess the collection of QIs on the bases of importance, obtainability, and measurability. The experts had the option of adding and rating more QIs where appropriate.

6. The Round 5 questionnaire required the experts to reconsider and reassess the ratings of the collection of QIs subject to the provided feedback from Round 4.
7. In Round 6, the highest rated QI for each KPI was selected and the experts were required to assign percentile/scoring values to five performance demand levels. The final three rounds helped in developing FQRs to quite objectively and reliably assess ESM performance in projects.

2.4.3.4.2 Ranking Scales

In this study, the five-point scale was consistently used to rate the sets of factors under investigation. Particularly, the five-point scale is beneficial and most commonly used for Delphi surveys in CEM research because of the suitability for diverse statistical analysis (Ameyaw et al., 2016). Generally, the five-point scale is very frequently adopted for questionnaire surveys in CEM research (Yeung et al., 2007; 2009a; 2009b; Ibrahim et al., 2013; 2015a; Yang et al., 2010; Yang et al., 2011b; Masrom et al., 2013; Close and Loosemore, 2014). The definitions of the scale points used in this research (including the Delphi surveys) are outlined in Tables 2.3 and 2.4.

Table 2.3 Ranking systems for both Delphi and ordinary survey

Ranking score	Attributes of ESGs	Expectations	Obstacles	CSFs	KPIs	Level of ESM practice
1	Least important	Strongly disagree	Least critical	Least important	Least important	Poorly
2	Fairly important	Disagree	Fairly critical	Fairly important	Fairly important	↓
3	Important	Neutral	Critical	Important	Important	
4	Very important	Agree	Very critical	Very important	Very important	
5	Most important	Strongly agree	Most critical	Most important	Most important	Excellently

Table 2.4 Ranking systems for both Delphi and ordinary survey (cont'd)

Ranking score	Quantitative indicators			Performance levels	Description	Validation
	Importance	**Measurability**	**Obtainability**			
1	Very unimportant	Very difficult to measure	Very difficult to obtain	A	Very poor	Strongly disagree
2	Unimportant	Difficult to measure	Difficult to obtain	B	Poor	Disagree
3	Neutral	Neural	Neutral	C	Average	Neutral
4	Important	Easy to measure	Easy to obtain	D	Good	Agree
5	Very important	Very easy to measure	Very easy to obtain	E	Very good	Strongly agree

2.4.4 Interview Method

Interviews, which may be unstructured, semi-structured or structured in nature (Chinyio and Akintoye, 2008; Olander and Landin, 2008; Ibrahim et al., 2015a; Yeung et al., 2008), are commonly used to collect qualitative data in research to produce significant information (Marshall and Rossman, 2011). Interviews allow problems to be investigated on smaller scales and yet deeper levels than other survey methods. The semi-structured interview method was preferred in acquiring data to encourage the experts to reveal more project experiences. This method enabled the researcher to explore new ideas about the phenomenon under study (Merriam and Tisdell, 2016). The method was focused on investigating the deeper and holistic views of the experts on ESM issues in the GCI. The themes included: the current ESM practices and activities; the comparative expectations of ESGs in project development; the obstacles hindering effective ESM; and the factors contributing to ESM success in the GCI. The interview guide used for the survey is attached as Appendix X.

The respondents for the interviews were identified and selected following a similar methodology and criteria applied in the Delphi survey (Section 2.4.3.1). In fact, some of the respondents in the interviews were also panellists in the Delphi survey. Generally, the interview experts were working at senior management levels in their respective organisations. The findings from the interviews

helped to partially fulfil the objectives 1, 2, 3, 4 and 5, and also contributed to the triangulation of the findings into the eventual framework.

2.5 DATA ANALYSIS METHODS

The data resulting from the semi-structured interviews, ordinary questionnaire survey, case study, literature review and Delphi Surveys were analysed using diverse techniques. The analytical techniques are discussed in this section. The main techniques used for analysis include content analysis, mean score (MS) ranking, Kendall's (*W*), t-tests, correlation analysis (*r*), Cronbach's alpha (α) reliability analysis, PCFA, and FST.

2.5.1 Content Analysis

The content analysis technique is commonly associated with qualitative research to identify themes emerging in data (Elo and Kyngas, 2008), and allows for systematic and objective analysis of written, pictorial or verbal messages (Cole, 1998). It is used to establish the main data facets by counting the number of times a theme/topic is depicted (Fellow and Liu, 1997). Simply, large amount of word data can be distilled into lesser content based on certain related categories (Elo and Kyngas, 2008). In this study, the technique was engaged to analyse the broad SM literature and interviews, and also enabled the triangulation of findings into the framework. In line with Cavanagh (1997), open coding was initially used to derive the themes from the data and then grouped into specific categories to explain the phenomenon under study. This was done to facilitate knowledge generation and comprehension (Cavanagh, 1997).

2.5.2 Mean Score (MS) Ranking

MS ranking is widely applied in CEM research where respondents are required to rate the level of importance/criticality of factors using Likert scales (Yang et al., 2009b; Yang et al., 2011a; Yang

et al., 2011b; Wei et al., 2016). In this research, the MS was used to rank the lists of factors in the questionnaire surveys (e.g. levels of importance and criticality). The formula is presented below;

$$MS = \frac{5n_5+4n_4+3n_3+2n_2+1n_1}{N} \quad (2.1)$$

where n = the number of respondents assigning respective Likert scale scores to the variable; and N = total number of responses to the variable.

2.5.3 Kendall's Coefficient of Concordance

Given the fact that data was collected from experts with diverse profiles (e.g. public or private sectors), it was important to determine the level of agreement of all the responses. The Kendall's (*W*) was similarly applied to assess the degree of agreement of the responses in the ordinary questionnaire and Delphi surveys (Yeung et al., 2007; Yang et al., 2011b). With a range of 0 to 1, a Kendall's (*W*) value close to 1 shows that there is a strong agreement among the responses, and vice versa (Sheskin, 2011). The formula is represented as (Siegel and Castellan, 1988):

$$W = 12\frac{\sum_{i=1}^{n}(R_i-R)^2}{P^2(n^3-n)-pT} \quad (2.2)$$

where n = number of factors; R_i = *i*th factor rank; *R* = the mean of R_i values; *p* = total respondents' number; and T = correction factor for tied ranks.

Given a null hypothesis that "there is no significant agreement on the rating of factors by respondents", a 0.05 significance level was set for the analysis. Hence, Kendall's (*W*) outcome with significance test value smaller than 0.05 informs that the null hypothesis is unsupported. The use of the Kendall's (*W*) value is most appropriate only if the attributes (number of factors) are below 7 (Siegel and Castellan, 1988). However, if the attributes exceed 7, then the Chi-square (χ^2) test result is rather applied as an approximation. Putting it differently, where the calculated (χ^2)

value is more than the corresponding value on the critical (χ^2) table, then it indicates that the null hypothesis is unsupported.

2.5.4 T-test Analysis

The t-test is parametric in nature and assumes the normality distribution, independence and variance homogeneity of samples (Kim, 2015). It is performed to check if a significant difference exists among groups of respondents about their ratings of factors. In this study, the one-sample and paired sample t-tests were performed on the ratings of the ESG expectations. The one-sample test is preferred where the population standard deviation is unknown and the sample is even small ($n < 30$). It is used to test whether the population mean equals the predefined value (Verma, 2013). In this study, the mean ratings of the ESG expectations were compared to the central value of the five-point Likert scale (i.e. 3.00). The formula is given as (Verma, 2013):

$$t = \frac{\bar{X} - \mu}{S/\sqrt{n}} \tag{2.3}$$

where t is the test statistic value; $\bar{X}$ is the mean of sample; μ is the specified mean of population; S is the standard deviation of the sample; and n is the sample size.

The paired-sample test (repeated measure) is suitable where there is need to compare mean ratings assigned by same respondents to variables on two separate occasions, or where there are corresponding variable pairs (Pallant, 2005). In conducting the test, the data ought to be collected in pairs on same set of factors in the two different occasions. It was used to compare the means of expectations between pairs of the ESGs. The formula is given as following (Verma, 2013):

$$t = \frac{\bar{d}}{S_d/\sqrt{n}} \tag{2.4}$$

The pairwise differences (d_i) are first computed for all *n* paired data. The mean ($\bar{d}$) and standard deviation (S_d) of the differences (d_i) are then computed. t is the test statistic value.

2.5.5 Correlation Analysis

In determining the sign (negative or positive) and strength of linear relationship between pairs of variable set, the correlation analysis is performed. The nature and level of scale measurement of data determine the type of correlation analysis that is suitable for each case. The absolute coefficient value shows the strength of association between the variable pairing. The correlation coefficient ranges from 0 to ±1. A coefficient of 0 manifests that there is no association between the variable paring, whiles ±1 shows that a perfect positive or negative relationship exists between the variables (Pallant, 2005).

The parametric Pearson product-moment correlation (*r*) is suitable for interval data, or a mix of both dichotomous and interval data (Pallant, 2005). The Pearson (*r*) was adopted for this study to measure the linear relationships among the KPIs of ESM in construction projects. The formula is given below (Verma, 2013):

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{(N\sum X^2 - [\sum X]^2)(N\sum Y^2 - [\sum Y]^2)}} \quad (2.5)$$

where "X" and "Y" are the two sets of independent variables with signs and strength of linear correlation between them; and *N* is the number of paired scores.

The nonparametric Spearman's rank order correlation (*r*) is designed for ranked or ordinal level data (Pallant, 2005). It was used to measures the relationship between the rank order of the expectations of ESG parings. The computation does not take into consideration the equal variance

or normality assumption of data but rather, the focus is on the rank order differences of the ESG expectations (Hwang et al., 2015). The formula is given as (Bolboaca and Jäntschi, 2006):

$$r = 1 - \frac{6\sum D^2}{n(n^2-1)} \qquad 2.6$$

where *D* is the difference between each rank pairing; and *n* is the size of sample.

2.5.6 Cronbach's Alpha (α) Reliability Analysis

The Cronbach's (α) is one of the commonly used models to test the reliability of dataset. It is essential in determining the wider applicability and validity of the variables identified from literature (Oyedele, 2013). In this context, the Cronbach's (α) was computed to statistically establish if the expectations of ESGs, and the obstacles and CSFs of ESM in the questionnaire survey reflected properly the constructs they were supposed to measure. The (α) value ranges from 0 to 1; 0 denotes the test is completely unreliable whereas 1 indicates the test is perfectly reliable (Cronbach, 1951). A Cronbach's (α) benchmark of 0.70 denotes good reliability and internal consistency of data (Nunnally, 1978). The formula is represented as (Li, 2003):

$$\propto = \frac{k\overline{cov}/\overline{var}}{1+(k-1)\overline{cov}/\overline{var}} \qquad (2.7)$$

Where *k* denotes the number of scale items; $\overline{cov}$ denotes the average covariance among the scale items; $\overline{var}$ denotes the average variance among the scale items. In the case that the variables could be standardized and based on a common variance, the formula is refined as:

$$\propto = \frac{k\bar{r}}{1+(k-1)\bar{r}} \qquad (2.8)$$

where $\bar{r}$ represents the average correlation between the variables.

2.5.7 Factor Analysis

FA has become a popular and powerful statistical analysis tool in CEM research (Lingard and Rowlinson, 2006), and often engaged to reduce a list of factors into smaller groups based on the underlying structure and interrelationships. Therefore, FA ensures that the reduction of the list of factors to smaller factor groups does not lead to significant loss of the original information/data (Norusis, 1993; Hair et al., 1998). Among the FA techniques in literature, the PCFA produces the most suitable factor solution in data reduction process (Fabrigar et al., 1999). The underlying supposition of the PCFA is that latent constructs could be employed to adequately explain the complex phenomenon (Chan et al., 2004).

In this study, the PCFA was adopted to resolve the underlying dimensions of the obstacles and CSFs of ESM in construction projects. PCFA is beneficial such that further statistical analysis could be conducted based on the factor solution generated. Chan et al. (2004, pg. 192) defined four sequential steps for conducting FA as:

1. Use a robust method such as questionnaire survey to identify and establish the variables (e.g. obstacles) relevant to ESM in construction projects,
2. Work out the correlation matrix for the variables,
3. Extract and rotate the principal factors,
4. Interpret and name the principal components as the underlying constructs.

In order to ensure that FA is suitable for a dataset, it is important to carry out some statistical tests including the Bartlett's test of sphericity and Kaiser-Meyer-Olken (KMO) (Fox and Skitmore, 2007). The KMO test measures the adequacy of sampling whiles the Bartlett's test of sphericity verifies the existence of correlations among variables. Both tests are related to the sample size of dataset. The KMO ranges from 0 to 1 inclusively. A KMO statistic result under 0.5 implies the

partial correlation values between the variable parings are large and hence, invalidates the FA technique (Norusis, 1993). In contrast, a KMO statistic result of at least 0.5 is widely acceptable in research (George and Mallery, 1999; Norusis, 1993). The Bartlett's statistic as well tests for the existence of an identity matrix and should be significant ($p < 0.05$) (Kaiser, 1974; Oyedele, 2010).

2.5.7.1 Factor Extraction and Rotation

FA technique involves two main processes; the factor extraction and factor rotation processes (Norusis, 1993). The factor extraction process involves establishing the least factor-solution that could best explain the interrelationships existing among the variable set. Factor extraction can be performed using diverse techniques like principal components, principal factors, alpha factoring, and maximum likelihood factoring (Pallant, 2005). In this study, the principal component factor extraction was adopted as it produces the most suitable solution (Fabrigar et al., 1999). Besides, the factor rotation process is conducted to improve the factor-solutions in terms of the interpretability of the variables. Among the rotation techniques, the varimax rotation was adopted due to its common usage in CEM research to properly explain the relationship between the derived principal factors and the observed variables (Yang et al., 2009b; Tang and Shen, 2013; Yang and Shen, 2015; Leung et al., 2004a, 2013b; Oyedele, 2010). The eigenvalue is equivalent to the summation of the square loadings of items constituting a factor and denotes the same factor's total variance explained (Cheung et al., 2000). It was adopted in this study due to its wide usage as the cut-off criterion in CEM research. As such, only the principal factors with eigenvalues exceeding 1 were retained in accordance with Kaiser's criterion (Kim and Mueller, 1994).

2.5.8 Fuzzy Set Theory

The FST is a modern dimension of applied mathematics focused on providing solutions for ill-defined and intricate fuzzy phenomena in real-time problems that are clouded with vague and

incomplete information (Singh and Tiong, 2005). The FST goes back to the early works of Professor L.A. Zadeh in 1965. He opined that the increasing complication of a system minimizes human ability to make accurate and significant decisions regarding human behaviour. As the process continues, the precision and significance of human decision-making in such a system will become mutually exclusive after reaching a threshold. This is referred to as the principle of incompatibility. FST helps in providing practical solutions to problems which cannot be appropriately handled by classical probability theory. This is because FST acknowledges that the transition of the elements of a set from a level of membership to zero membership is steady instead of abrupt (Baloi and Price, 2003). FST, therefore, enables the classical set concepts to be generalised so that ill-defined and complex systems can be modelled (Chan et al., 2009).

Even though different concepts are associated with FST in decision-making, the most commonly applied in CEM research are the linguistic variables and membership functions (MFs). Meanwhile, the MFs applied in CEM research usually take the shapes of trapezoid and triangle (Fayek and Oduba, 2005). Polygonal MFs have advantages including: (1) ease of use with small amount of data; (2) modal values of MFs could be easily modified based on measured input and output values of a system; (3) input and output mapping models made up of linear segments could be obtained; and (4) the condition of a partition of unity is easily satisfied (Piegat, 2001). However, polygonal MFs are not continuously differentiable, hence, the need to use fuzzy MFs to define a better classification of non-uniform QRs for the QIs (Yeung et al., 2012). A fuzzy set encompasses elements with varying extents of membership ranging from 0 to 1, where 0 indicates no membership and 1 shows full membership within the set (Singh and Tiong, 2005). FST uses linguistic variables, which are natural lingual expressions like cold, warm, hot and moderate, to model the fuzziness naturally forming part of the human cognitive process. FST has been enriched

in content over the years and serves as an appropriate tool for analysing and modelling the decision-making in complex systems where the indeterminacy pattern arises from the inherent variability and vagueness (Zadeh, 1994; Boussabaine, 2014).

In CEM research, FST is mainly applied in decision making, performance, evaluation/assessment, and modelling of diverse construction-related issues (Chan et al., 2009). An objective of this study concerns the development of ESM performance assessment system for construction projects. Therefore, FST was found useful in connection with the Delphi technique for collecting and analysing experts' opinions on the performance attributes of ESM (Yeung et al., 2008). The development of the ESMPI, and the corresponding QIs and QRs will ensure that ESM performance can be fully assessed, monitored and upgraded in construction projects (Yeung et al., 2009a). It provides an opportunity for assessors to assess mutual external SS in construction projects with much flexibility and reliability and in objective and practical manner with less dependency on their subjective value judgement (Yeung, 2007).

2.5.8.1 Establishing Fuzzy Membership Functions

Four main approaches have been identified in literature for establishing fuzzy MFs, viz: the horizontal approach, vertical approach, pairwise comparison method, and MF estimation approach aided by probabilistic characteristics (Chow, 2005; Yeung et al., 2012). Asides, the modified horizontal approach (MHA) merges and optimizes the horizontal and graphical methods in developing fuzzy MFs (Bandemer and Gottwald, 1995). Due to the inherent high accuracy, the MHA was preferred in this research to derive the final outcome of the fuzzy MFs from simple probability functions (Chow, 2005; Ng et al., 2002; Yeung et al., 2009a; Yeung et al., 2012; Chow and Ng, 2007). The pure horizontal approach alone enabled the derivation of the optimal *k*-value (the number of bands) to enhance the estimation accuracy (Bharathi-Devi and Sarma, 1985), and

the graphical method provided visual solutions to the challenge of discontinuity associated with transition from zero to full membership in the horizontal method (Otnes and Enochson, 1972).

The MFs for the KPIs were graphically plotted on scatter diagrams based on the universe of discourse values defining the fuzzy set (X) and the membership levels of the elements constituting the fuzzy set (A). Best-fit lines were then introduced through the points forming the MFs. It is recommended that the best-fit lines drawn must go through the peak points with full membership (Chow and Ng, 2007; Chow, 2005). This is important because the fuzzy MF is required to have a turning point at the peak (full membership). Given the increasing performance levels of "very poor", "poor", "average", "good" and "very good", the corresponding lines of best-fit of each QI were produced on the same graph, and the intersection point(s) between successive performance levels indicate that they have the same extent of membership. Therefore, it is reasonable to use the intersection points to define the QRs for the five performance levels of the QIs (Yeung et al., 2012).

In this research, the MHA was adopted as it has been also used in previous similar works (Chow, 2005; Ng et al., 2002; Yeung et al., 2012; Yeung et al., 2009a; Chow and Ng, 2007). The limitation of this approach is that the derived regression lines must meet the constraint of going through the perfect membership point(s), which therefore considers only the effect of dependent variables. Thus, the commonly used vertical error method (VEM) minimizes the residual sum of squares by considering the vertical distances only (Yeung et al., 2012). Simply, the VEM does not take into consideration the effect of independent variables whiles developing the MFs. However, the horizontal error method (HEM) and bisector error method (BEM) are available to deal with this limitation of error minimization. The HEM minimizes the residual sum of squares by considering the effect of horizontal distances (independent variables) whiles the BEM does the minimization by considering the effect of both vertical and horizontal distances (dependent and independent

variables) (Yeung et al., 2009a; Yeung et al., 2012). Hence, the MHA was preferred to develop the fuzzy MFs of the QIs by constructing the constrained regression lines with the BEM. This is because consideration was given to the error in both perpendicular directions (dependent and independent variables). Thus, the HEM and VEM were incorporated in the BEM and hence, produced better results.

2.5.8.2 Steps Involved in Defining the Fuzzy Quantitative Requirements

There were seven (7) sequential steps involved in defining the fuzzy QRs for the QIs in this study (Chow, 2005; Ng et al., 2002; Yeung et al., 2009a; Chow and Ng, 2007; Yeung et al., 2012): (1) Establish the best quantitative interpretation for each of the shortlisted KPIs; (2) Quantify the fuzzy QIs; (3) Identify the "X" values of the fuzzy MFs; (4) Identify the "A" values of the fuzzy MFs; (5) Formulate fuzzy MFs; (6) Derive fuzzy MF graphs (by constructing lines of best-fit with the VEM, the HEM, and the BEM); (7) Identify the FQRs for each best QI against the five performance levels. The steps involved in defining the fuzzy QRs are illustrated in the Figure 2.6.

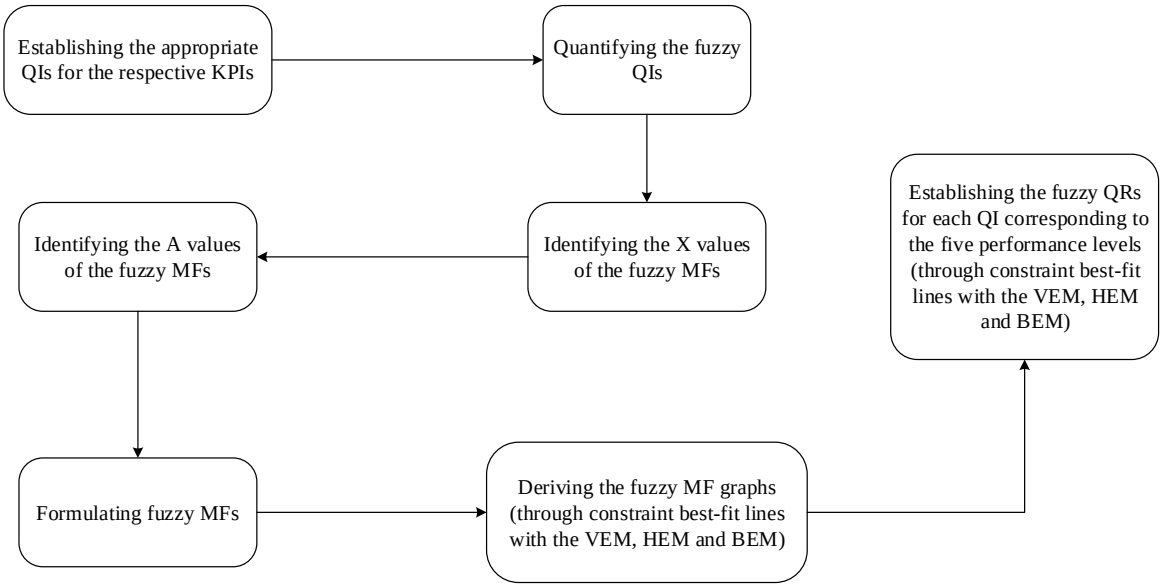

Figure 2.6 Steps involved in defining the fuzzy QRs

2.5.8.2.1 Establish the Best Quantitative Interpretation for Each of the Shortlisted KPIs

A number of QIs for each KPI were identified through interviews and the experts were required to rank their levels of importance, obtainability and measurability in a Delphi setting. The most appropriate QI for each KPI was then established and utilised for the development of fuzzy MFs to measure the ESM performance in Ghana.

2.5.8.2.2 Quantify the Fuzzy Quantitative Indicators

By conducting a concluding survey in the Delphi process, the experts were required to assign quantitative figures (f_0) to the most vital QIs, expected for the five performance levels, viz; "very poor", "poor", "average", "good", and "very good".

2.5.8.2.3 Identify the "X" Values of the Fuzzy Membership Functions

Typical fuzzy MFs are constituted by *X* and *A* values. The *X* values are the elements in the universe of discourse and define the fuzzy set, whiles the *A* values indicate the membership degrees in that fuzzy set. The X_i values represent the averages of the (f_0) values within the bands $[B_i(i = 1,2,3, \dots k)]$, assigned by the experts against the performance levels of each shortlisted QI. The definition of the X_i values was according to the least and highest (f_0) values of the QIs and the number of bands (k). The k value was computed by the well-known formula below (Bharathi-Devi and Sarma, 1985).

$$k = 1.87(N-1)^{\frac{2}{5}} \tag{2.9}$$

where *N* is the sum of valid expert responses.

Upon defining the range applicable to each band, the (f_0) values captured in the corresponding bands were counted. The *X* values of the fuzzy MFs for the expected performance levels (e.g. good)

were derived from the means of the counted (f_0) values in the corresponding bands (Yeung et al., 2009a; Yeung et al., 2012).

2.5.8.2.4 Identify the "A" Values of the Fuzzy Membership Functions

The membership levels of the elements of the fuzzy set were computed using the formula below (Chow, 2005; Ng et al., 2002).

$$A_i = \frac{n(B_i)}{n_{max}} \; for \; i = 1,2,3,4, \dots k \qquad (2.10)$$

where $n(B_i)$ denotes the sum of valid expert responses having f_0 values assigned to a particular band B_i; and n_{max} also stands for the peak value of all the $n(B_i)$ with $i = 1,2,3,4, \dots k$.

The standard deviation Std (A_i) values were calculated to verify the validity of the estimated memberships of the fuzzy set elements (equation 2.11). Where the $std(A)$ values fall below the corresponding A_i values, the estimation of the membership is regarded satisfactory (Chow, 2005; Ng et al., 2002). Otherwise, the results are considered unacceptable and the outliers are recommended to be deleted (Yeung et al., 2012).

$$std(A_i) = A_i \left(\frac{1 - A_i^{\frac{1}{2}}}{N} \right) \qquad (2.11)$$

where N is the total valid expert responses for the QIs.

2.5.8.2.5 Formulate Fuzzy Membership Functions

The corresponding *X* and *A* values, representing the horizontal and vertical axes respectively, were plotted on scatter diagrams in order to derive the best-fit lines.

2.5.8.2.6 Derive Fuzzy Membership Function Graphs

The MF graphs were plotted by constructing the lines of best-fit through the discrete points of each performance level on the scatter diagram. The lines of best-fit were logically required to go through the full membership points (Chow, 2005; Yeung et al., 2012; Yeung et al., 2009a; Chow and Ng, 2007). The lines of best-fit were constructed by the MHA whiles the errors of estimation were minimized by taking the residual sums of squares of the vertical distances alone (VEM), horizontal distances alone (HEM), and both vertical and horizontal distances together (BEM) (Yeung et al., 2009a; Yeung et al., 2012).

2.5.8.2.7 Identify the FQRs for Each of the QIs against the Five Performance Levels

The intersection points of successive MFs corresponding to the performance levels of the specific QIs were used to define the QRs given that they represent the same degrees of membership (Chow, 2005; Yeung et al., 2012; Yeung et al., 2009a; Chow and Ng, 2007). Thus, the MF of one performance level (e.g. good) quantitatively ranges up to the point where it intersects with the MF of the successive performance level (i.e. very good).

2.5.9 Frequencies and Percentages

The descriptive frequencies and percentages were adopted to analyse data where simple counting and ranking were required. The frequencies and percentages were dominantly used to analyse the profiles of respondents, the interviews and questionnaire survey on the present state and practices of ESM in the GCI, and the Delphi surveys.

2.6 CHAPTER SUMMARY

The research methodology and methods were reviewed in this chapter. Initially, general research design ideas were reviewed and the relevant design was selected to arrive at credible research

outcomes. Afterward, the data collection instruments and data analysis methods appropriate for this study were discussed. In the next chapter, a review of general SM literature in construction is presented.

CHAPTER 3 REVIEW OF PREVIOUS STAKEHOLDER MANAGEMENT STUDIES

3.0 INTRODUCTION

In the preceding chapter, the research methodology was discussed. This chapter presents an overview of general SM literature and how it is relevant for the construction industry. Initially, the numerous definitions of stakeholder given in literature, the emergence of the stakeholder concept and the key SM models are examined. Afterward, the various processes and activities that constitute typical SM and their criticisms are discussed. A systematic review of previous literature is also presented. Subsequently, the gaps in extant literature are recognized and propositions for this study are outlined.

3.1 STAKEHOLDER THEORY

3.1.1 Stakeholder Concept

Several articles and books on stakeholder concept have come to light across the past half century. Researchers have defined "stakeholders" in several ways throughout the theory's development. Table 3.1 shows broad and narrow definitions of "who stakeholders are" in projects. Interested readers should look for a longer list of similar scholarly definitions in Friedman and Miles (2006). The stakeholder concept did not originate directly from SM field but rather from the strategic management mainstream. The concept was adopted to generalise the notion of stockholders as the sole groups deserving management response. The earliest definition reported in literature was captured in an internal discussion at the Stanford Research Institute (SRI) in 1963. In accordance, stakeholders were explained as entities and persons without whose support the organisation's existence will be threatened. The SRI researchers argued that unless managers understand these stakeholders' needs and concerns, they would not devise corporate objectives that will in exchange

receive necessary support for organisations continual survival (Freeman et al., 2010). However, this definition has been considered as too narrow and excludes a lot of other relevant groups (Olander, 2007). As such, there has been scholarly contention as to how "stakeholders" should be properly defined.

Table 3.1 Selected broad and narrow definitions of "who stakeholders are"

	Definition	Author(s)
Broader view	"Individuals or groups that have an interest or concern in a particular issue"	Scheffran (2006)
	"Individuals and organisations that are actively involved in the project, or whose interests may be affected as a result of project execution or project completion"	PMI (2004)
	"Individuals, groups, and other organisations who have an interest in the actions of an organisation and who have the ability to influence it"	Savage et al. (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 the organisation's objectives"	Freeman (1984)
	"Individuals and organisations who are actively involved in the project, or whose interests may be positively or negatively affected as a result of project execution or successful project completion"	PMI (1996)
Narrow view	"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 Ulhoi (2001)
	"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)
	"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)
	"A person or group of people who has a vested interest in the success of a project and the environment within which the project operates"	McElroy and Mills (2000); Olander (2007)
	"Individuals and constituencies that contribute, either voluntarily or involuntarily, to its wealth-creating capacity and activities, and who are therefore its potential beneficiaries and/or risk bearers"	Post et al. (2002a)
	"The fundamental idea of the stakeholder is that he or she or it has a stake in an organisation. Stakeholders are those that contribute voluntarily or involuntarily to the organisation's wealth-creating capacity and activities. They are, therefore, its potential beneficiaries and/or risk bearers"	Post et al. (2002b)

Note: Modified from Leung and Olomolaiye (2010)

Over the years, many definitions emerged as improvement to that of SRI. Freeman (1984) stated that a stakeholder is *"any group or individual who can affect or is affected by the achievement of the firm's objectives"*. Subsequently, Mitchell et al. (1997) affirmed that the definition is characterized as being very broad and can encompass everyone. For instance, the definition

considers stakeholders to also comprise the terrorists, environment, thieves and blackmailers, who exist in the organisation's sphere of operation (Jensen, 2001).

Through the project management lens, stakeholders refer to *"individuals and organisations who are actively involved in the project, or whose interests may be positively or negatively affected as a result of project execution or successful project completion"* (PMI, 1996, p. 15). The definitions of stakeholders in Table 3.1 have generally reflected some common themes irrespective of the broad or narrow perspectives. According to Littau et al. (2010), the concept of stakeholders has taken three main viewpoints in project management literature. Researchers concerned with the first perspective see stakeholders as individuals or entities that can affect or be impacted by implementation of project (e.g. Freeman, 1984). Stakeholders are differently perceived to be individuals or entities that have interests or stakes in project delivery (e.g. Olander, 2007). Finally, the third perspective definitions combine the previous two perspectives to give broader coverage (e.g. Bourne and Walker, 2005). The implication of the definitions is that the stakeholders are individuals or entities that can act as threat or benefit to the project or organisation (Gibson, 2000).

Given that this research aims at the three ESGs involved in projects (i.e. GAs, GP, and ALCs), stakeholders are redefined to suit the context as *"any individual(s) or entities that affect or can be affected by, have a significant stake (interest, right, ownership, knowledge, influence, or contribution) in, or are generally indispensable to the accomplishment and survival of, the construction project"* (Oppong et al., 2018). The definition is particularly based on the scholarly works of Freeman (1984) and Bourne (2015). It gives credibility to stakeholders such as the media, representatives of deities, and local religious groups that are crucial in project delivery (Ezeabasili et al., 2015; Dansoh et al., 2019). However, the stated groups and individuals have been difficult to consider as stakeholders in previous studies because of lack of actual stakes in construction

project (Olander and Landin, 2005). This improvement in definition follows Goodpaster (1991) who argued that even moral stakeholders such as the media and the religious groups could become strategic over time. Hence, the normative theory claims that the management actions should equally be directed towards moral stakeholders and follow ethical guidelines (Freeman et al., 2007). Therefore, this study's definition is more inclusive given that ESGs are least formal and organised, and it is difficult to really identify them with their associated expectations from the onset of construction projects.

3.1.2 Stakeholder Theory Development

Due to the abundance of research in this domain, a lot of ambiguous views regarding the composition of the stakeholder theory co-exist (Hooge and Dalmasso, 2015). Aaltonen (2011, p. 166) stated that *"a central purpose of stakeholder theory is to enable managers to understand and, subsequently, manage stakeholders more strategically"*. The stakeholder theory is concerned with who and what is essential in project or organisation's endeavour (Mitchell et al., 1997). Elias et al. (2002) traced the growth of stakeholder theory and provided a literature map composed of 8 levels (Figure 3.1). They stated that upon the emergence of the stakeholder theory by SRI in 1963, it diversified into four new areas i.e. corporate planning, corporate social responsibility, systems theory, and organisation theory.

In line with corporate planning studies, Hussey and Langham (1978) proposed a framework that captures the organisation and related stakeholders for corporate planning purposes. From the late 1960s, the systems theorists also emerged in literature. Churchman (1968) developed the systems theory to handle social issues from the perspective of an open system. The stakeholder systems model accentuates on participation and assumes that it is important for problems to be defined by enlarging or synthesizing, rather than focusing or analysis. Post (1981) identified the main areas

of corporate social responsibility research to cover many techniques, ideas and concepts. This concept distinctively includes even non-conventional stakeholders who have antagonistic relationships with the organisation. In organisation theory literature, Pfeffer and Salancik (1978) developed a model to illustrate the interactions between the organisation and its environment, and also claimed that organisational effectiveness is contingent on the management of the demands of stakeholders.

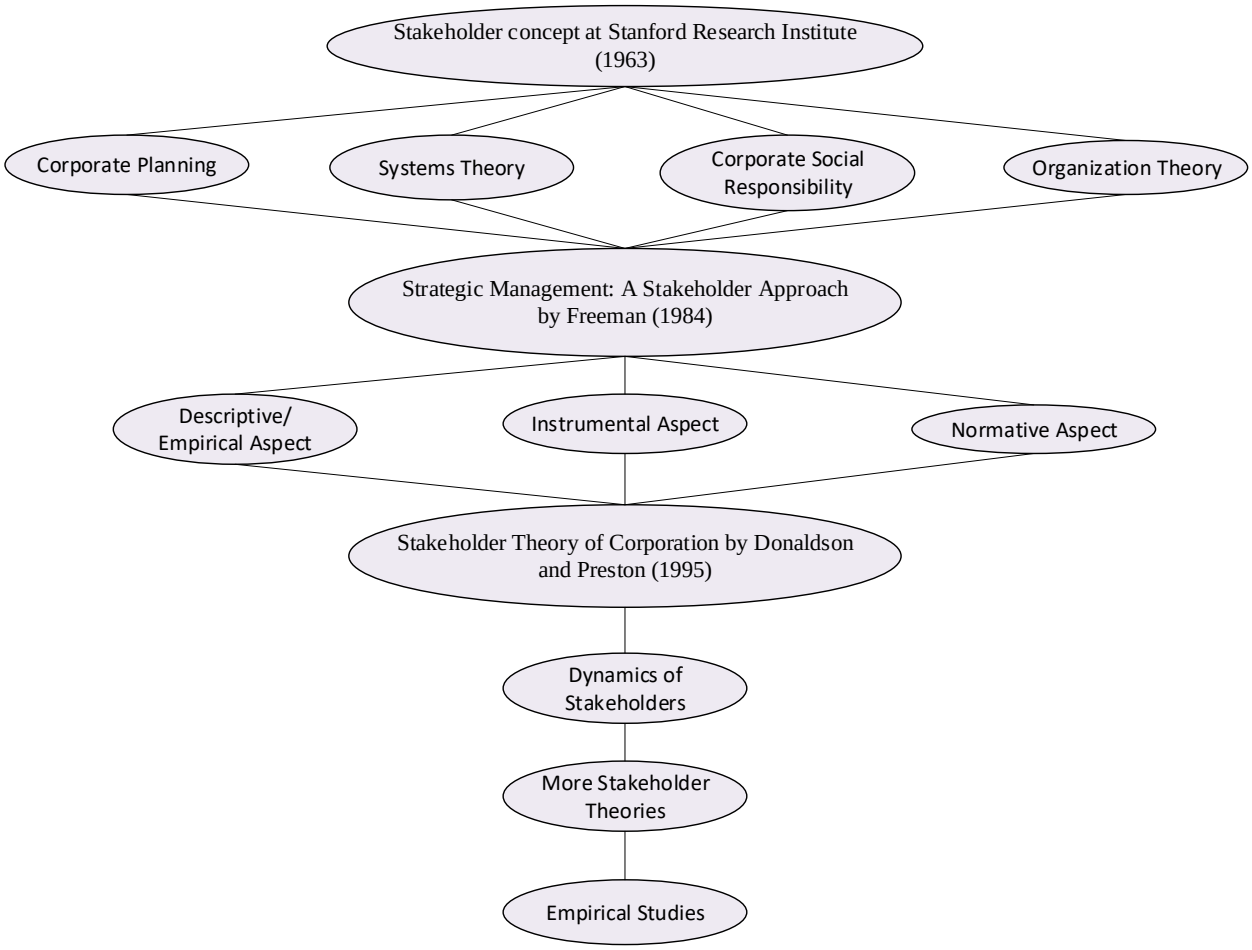

Figure 3.1 Stakeholder literature map

Adopted from Elias et al. (2002)

After the so called "classical stakeholder literature" (Elias et al., 2000), Freeman's (1984) ground-breaking book publication became prominent. Although there have been diverse definitions of who stakeholders are, most researchers acknowledge his definition to be landmark in the evolution of stakeholder literature (Elias et al., 2000). Freeman (1984) in his work suggested a model which covers three stakeholder analysis levels i.e. rational, process, and transactional levels. The rational level focuses on exploring the identity of stakeholders and their perceived stakes in the organisation. The process level explores how the organisation manages its relationship with the stakeholders and determines whether the process aligns well with its rational stakeholder map. The transactional level seeks to understand the bargains between the organisation and its stakeholders, which is expected to correspond with stakeholder map and the organisation's processes toward the stakeholders (Freeman, 1984).

After Freeman's (1984) book, stakeholder theory research took a turn to the instrumental, normative and descriptive approaches (Donaldson and Preston, 1995). The descriptive (empirical) approach seeks to elaborate on the methods, process or ways that make up the SM process. The instrumental approach also pertains to the influence or impact of SM processes on the realization of organisation's performance goals. Asides, the normative approach attempts to explain the ethical and philosophical supportive framework for proper SM (Donaldson and Preston, 1995).

Two years later, Rowley (1997) and Mitchell et al. (1997) proposed models which were founded on the phenomenon of stakeholder dynamics. Rowley's model was on the "network of stakeholder relationships". Accordingly, stakeholders' attitudes and actions may change due to the dynamics of the stakeholder relationships. From a different viewpoint, Mitchell et al. (1997) proposed that stakeholders' level of power, legitimacy and urgency (referred to as attributes) define their saliency

in project delivery. PMs can realise the changes in stakeholder salience by continuously analysing these attributes (Mitchell et al., 1997).

In accordance with the resource dependency theory (Pfeffer and Salancik, 1978), modern scholarly works view stakeholders as holders or contributors of necessary resources that focal organisations need in order to implement projects and create value for the same stakeholders (Eskerod and Vaagaasar, 2014). As such, Savage et al. (2010) suggested that organisations should adopt the "integrative strategies" instead of "distributive strategies": the former achieves a win-win output whiles the latter accomplishes win-lose outputs for the organisation and its stakeholders respectively. Moreover, the distinction between "management of stakeholders" and "management for stakeholders" approaches has been emphasized (Freeman et al., 2007). Presently, more empirical studies have been carried out to analyse stakeholders and their relationships with construction project implementation (Olander, 2007; Olander and Landin, 2005, 2008; Yang and Shen, 2015; Yang et al., 2009b).

3.1.3 Management of Stakeholders Versus Management for Stakeholders Theories

The two theories distinguish between how the stakeholders are included and considered in projects (Freeman et al., 2007, 2010). The "management of stakeholders" is the more classical theory that regards the stakeholders as the direct or indirect providers of resources required by the organisation to successfully undertake its endeavours (Huemann et al., 2016). The theory is based on the instrumental perspective and tries to conform the stakeholders to project's requirements and objectives (Eskerod and Huemann, 2013). The theory suffers from its manipulative nature where only the stakeholders who are prioritized as important are considered in project process. Inversely, the interests of the other stakeholders (i.e. mostly ESGs) are regarded as hindrances for successful project implementation. Hence, managers will prefer to exclude such stakeholders from the

project's processes. Although the theory advocates for conflict prevention, it may often result in a win-lose disadvantage for the ESGs especially (Huemann et al., 2016).

Contemporarily, the "management for stakeholders" theory has become relevant for a more sustainable and ethical project development, backed by a conscious effort to fairly and equitably engage all stakeholders in project (Eskerod and Huemann, 2013; Freeman et al., 2007, 2010; Eskerod et al., 2015a, 2015b). The theory promotes the attainment of a win-win situation for as many stakeholders as possible, if not all (Huemann et al., 2016). It offers a collective and inclusive approach focused on engaging the broader mass of stakeholders that may suffer from organisation's endeavours, by balancing and meeting their expectations in project development (Freeman, 1984). Besides, it recognizes the needs, rights and legitimacy of stakeholders founded on relational theory (Harrison et al., 2010). Moreover, it emphasizes values such as transparency, fairness and benefits realization in projects (Di Maddaloni and Davis, 2017). The approach faces criticism of lack of focus on the stakeholders who matter most in project. Also, the long-term search for inclusiveness to attain the win-win equilibrium could be very frustrating, time-consuming and expensive for projects (Huemann et al., 2016).

Despite the limitedness of project resources to meet all expectations of stakeholders, the "management for stakeholders" theory is the most appropriate for this study. First, inclusivity is expected to become a regularized business in the construction industry as more stakeholders are becoming essential for project delivery (Newcombe, 2003; Dansoh et al., 2019; Ezeabasili et al., 2015). Second, the focus of study is the ESGs who in time past were not considered to be important in projects. However, projects have faced difficulties due to opposition by ESGs much more in developing countries (Rwelamila et al., 2015; IUCN, 2015; Owusu, 2012). The opposition of projects was because the views of the ESGs were not considered from the onset of projects. Third,

benefits realization has greater effect on project success. Managing the ESGs could enhance the management of the resultant project benefits by alleviating misjudgement in planning and multiplying transparency and answerability in the decision-making processes of construction projects (Di Maddaloni and Davis, 2017). Fourth, the broad consideration of ESGs in project development could minimize the negative effects of projects on stakeholder communities faced often in developing countries. Finally, the theory seems to be more relevant at the PS as the PMs have to become certain of all stakeholders and their potential impacts and demands in projects, and further manage them properly.

3.1.4 Key Stakeholder Management Models

Despite the existence of diverse models in SM literature, the three models elaborated here are very generic and cited in a lot of scholarly works. They have specific features that are worth mentioning and regarded as the foundation for SM research frameworks (Yang, 2010).

3.1.4.1 Stakeholder Strategy Formulation Model

This model was introduced into mainstream management literature by Freeman (1984), and it has become the classical opinion of the organisation and stakeholder relationship. In this view, the organisation is a significant entity that has direct relationships with all its stakeholders. Freeman (1984) suggested the stakeholder strategy formulation model, founded on rational stakeholder mapping concept (Figure 3.2). First, there is need to analyse the behaviour of stakeholders, which encompasses the past, present and future actions of stakeholders with the potential to enhance or hinder achievement of corporate goals. The logical explanation underlying the stakeholder behaviour should involve defining the objectives of the stakeholder groups, comprehending the group's external environment, and analysing their beliefs about the organisation (Freeman, 1984). The concluding analytical step for devising stakeholder strategic program was to recognize

possible coalitions among the stakeholders' objectives. Therefore, similar interests, actions, beliefs, or objectives among the stakeholders should be identified and examined in line with the economic, technological, social, political, and managerial effects (Freeman, 1984).

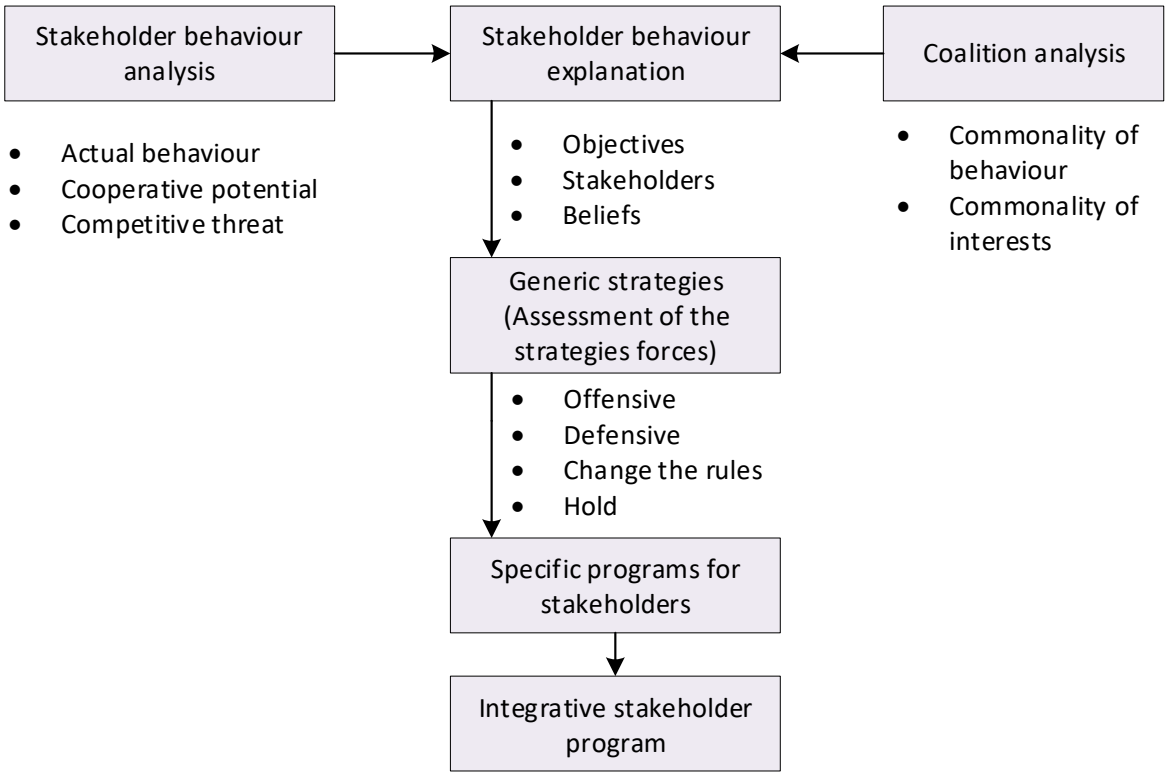

Figure 3.2 Stakeholder strategy formulation process
Adopted from Freeman (1984)

There is a lot of controversy surrounding Freeman's (1984) model for mapping stakeholders. The unrealistic assumption of the model is that PMs possess wealth of information about stakeholder expectations which enables the organisation to optimize its decisions (Crane and Livesey, 2003). Although stakeholder groups are interdependent of one another, the hub-and-spokes representation does not reflect the coalitions and intermediaries acting on behalf of the stakeholders. Roger and Kincaid (1981) argued that the model can only be applicable in the real world by adopting an

approach that also echoes the jointly influential feature of the communication process. Scholars that adopted Freeman's model in their works include Cleland and Ireland (2002) and Jergeas et al. (2000).

3.1.4.2 Stakeholder Salience Model

Mitchell et al. (1997) later brought to mainstream the stakeholder salience model (Figure 3.3). They described saliency as the extent to which PMs prioritize the competing claims and concerns of stakeholders. Based on this definition, they revealed that the saliency of stakeholders comprises power, urgency, and legitimacy attributes. Power refers to the utilitarian, coercive, or normative ability that stakeholders have to beckon others to do something, which otherwise wouldn't have been done. Urgency also explains the level to which stakeholders' claims and actions require immediate management attention, expressed in terms of timing and criticality. Finally, the legitimacy aspect describes how right, deserving or appropriate the claims and actions of the stakeholders are (Mitchell et al., 1997). Mitchell et al. (1997) concluded that PMs will give keen attention to stakeholders who have substantial power, and whose claims are both legitimate and urgent. This model explains why, when and how PMs attend to certain stakeholders at the expense of others (Achterkamp and Vos, 2008).

Stakeholder salience theory suggests that stakeholder power, urgency and legitimacy could be dynamic from one issue to the other, or time to time (Hooge and Dalmasso, 2015). However, the model is limited such that it does not well present the different levels of the three attributes (Pajunen, 2006). Pajunen (2006) further confirmed that the network positions of stakeholders and resources are dynamic in nature. Based on the interactions among the three attributes, stakeholders are characterized as; definitive (very important); dangerous, dominant or dependent (important); and demanding, discretionary or dormant (least important) (Mitchell et al., 1997). This model has

been cited in various scholarly works including Olander and Landin (2008), Aaltonen and Kujala (2010), Yang et al. (2011b), Beringer et al. (2013), and Mathur et al. (2008).

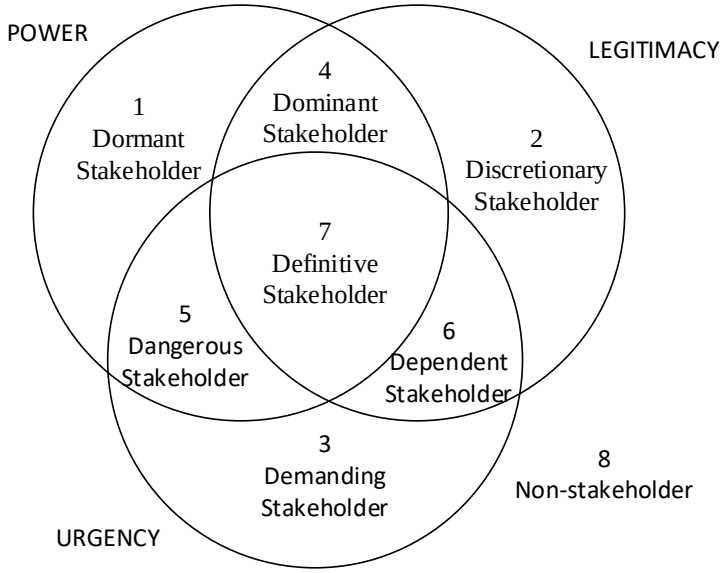

Figure 3.3 Stakeholder salience model
Adopted from Mitchell et al. (1997)

3.1.4.3 Social Network Model

Rowley (1997) presented a model founded on networks of social relationships in projects. He illuminated project management literature on the essence of moving from the norm of static to dynamic relationships among multi-stakeholders. This model incorporates the diverse and mutually dependent interactions that are concurrently operational in the organisation's environment. He asserts that interactions among stakeholders are always dynamic and in a continuous flux (Rowley, 1997). This implies that stakeholders' attitudes, positions, influences and actions are always changing from one stage of a project to another, showcasing the dynamics in stakeholder relationships and interactions (Yang and Shen, 2015).

An approach to understand the PSE is the use of social network analysis (SNA) to study the characteristics of the stakeholder structure as a whole and its composite impact on the organisation's strategies, instead of the influences of individual stakeholders. Rowley (1997) elaborated further how the stakeholder network density and the organisation's centrality impact the extent of organisation's resistance to stakeholder pressures. Rowley (1997) made two propositions: (1) as the network density increases, stakeholders' ability to constrain organisation's actions increases; and (2) as the centrality of organisation increases, its ability to resist pressure from stakeholders increases. Following the propositions, Rowley (1997) produced a structural classification of stakeholder influences (Table 3.2). Bourne and Walker (2006), Newcombe (2003), and Olander and Landin (2008) are among scholarly works that acknowledged the importance of the social network model due to its effectiveness in managing stakeholder relationships.

Table 3.2 A structural classification of stakeholder influences

		Centrality of the focal organisation	
		High	**Low**
Density of the stakeholder network	High	Compromiser	Subordinate
	Low	Commander	Solitarian

Source: Adopted from Rowley (1997)

The models discussed above constitute the basis upon which this research is undertaken. The strategy formulation model focuses on the development of strategies and SM process. The stakeholder salience and social network models provide the dynamic basis for the ESGs to be considered in the resultant framework. The attributes, networks of relationships, and positions of the ESGs change over time and give relevance to the latter two models in this study. Therefore, the knowledge from these models was considered in developing the framework suitable for the ESGs in the GCI.

3.2 CONSTRUCTION PROJECT PLANNING STAGE

As shown by the RIBA Plan of Work (2013), typical construction projects are broken down into eight different stages, which sequentially comprise; the strategic definition, preparation and brief, concept design, developed design, technical design, construction, handover and close out, and the in-use stage. The PS of construction projects hereafter encompasses "*the strategic definition, preparation and brief, concept design, developed design and technical design stages"* (Figure 3.4). Briefly, the PS comprises all project activities prior to the start of actual construction works.

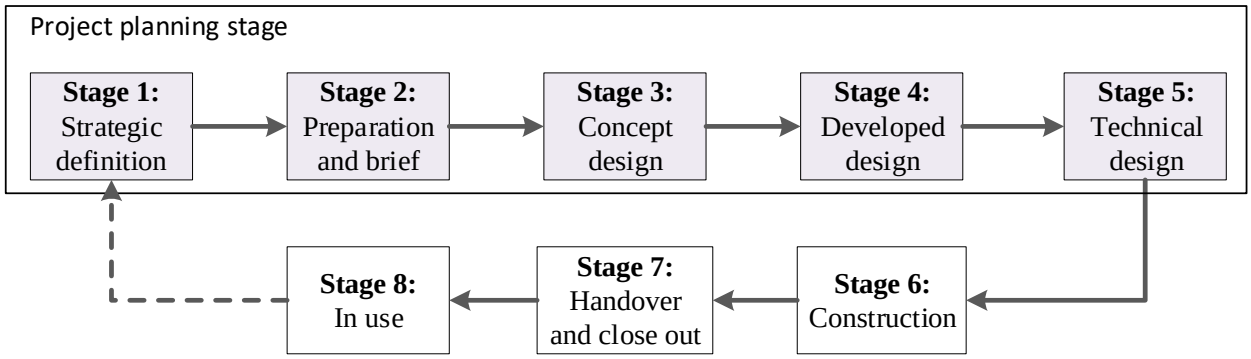

Figure 3.4 Project life cycle

Adapted from RIBA Plan of Work (2013)

Compared to other stages, the PS has significant influence on the entire construction project lifecycle and project success. Planning is a "predict and prepare" function of corporate managers that entails many activities including forecasting the future environment of a company, identifying the opportunities and threats, setting appropriate goals, and devising the most applicable method(s) to achieve the set goals (Laufer and Turker, 1987). More importantly, the PMs must responsibly plan, direct, and undertake the project in a way to meet expectations and standards, and also accrue satisfaction to the stakeholders (Zwikael, 2009). Since the ESGs can to a great extent influence the project decisions at this stage (Aaltonen and Kujala, 2010; Aaltonen et al., 2015; Olander and Landin, 2005, 2008), the PMs must collaborate with the ESGs having discrepant and correlated

interests. Without appropriately including the ESGs through complete and clear plans, the project cannot be well implemented, monitored, controlled, and evaluated frequently (Heravi, 2014). The significance of proper project planning includes the elimination or reduction of uncertainties, improvement of operational efficiency, in-depth understanding of project objectives, and effective monitoring and controlling of work (Kerzner, 2013). Moreover, economic, social, and environmental sustainability in project implementation can be achieved where the expectations and requirements of ESGs are duly considered and fulfilled (Bal et al., 2013). Hence, it is imperative for the PMs to adopt the necessary approaches to effectively involve and manage the ESGs so as to attain project success.

3.3 CLASSIFICATION OF CONSTRUCTION STAKEHOLDERS

Different classifications of stakeholders exist in literature including external and internal stakeholders (Calvert, 1995; Hill and Jones, 2001; Winch and Bonke, 2002); primary and secondary stakeholders (Carroll and Buchholtz, 2006); key and non-key stakeholders (Tasmanian Government, 2005); indirect and direct stakeholders (Smith and Love, 2004); business and non-business stakeholders (Cova and Salle, 2005); promoting and opposing stakeholders (Winch, 2004); responsible, impacted and interested stakeholders (El-Gohary et al., 2006); and inside and outside stakeholders (Newcombe, 2003). In line with decision-making, the classification could be in terms of anti, supportive, and neutral stakeholders (Chinyio and Akintoye, 2008). Molwus (2014) further presented other classification systems identified in literature (Table 3.3).

The classifications given in literature suggest that some stakeholders could belong to more than one special dimension. Therefore, there should be a multidimensional approach for capturing the multiplicity and intricacy of diverse stakeholders associated with construction projects (Chinyio and Olomolaiye, 2010). In solving the multidimensionality problem, it is important to adopt a

simple classification model of internal and external stakeholders, which has been similarly applied in the Stakeholder Circle methodology (Bourne, 2005; Yang and Shen, 2015).

Table 3.3 Stakeholder classifications in literature

According to	Categories	Defining characteristics
Stakeholder attributes	• Dormant • Discretionary • Demanding • Dominant • Dangerous • Dependent • Definite	• Power only • Legitimacy only • Urgency only • Power and Legitimacy • Power and Urgency • Legitimacy and Urgency • All three attributes
Stakeholder vested interest-impact index (viii)	• Active opposition • Passive opposition • Not committed • Passive support • Active support	• Pos = -1 • Pos = -0.5 • Pos = 0 • Pos = 0.5 • Pos = 1
Contractual relationship on the project	• Internal • External	• Having a contractual link with the project • Having no contract but could affect or be affected by the project
Attitudes towards the project	• Proponent • Neutral • Opponent	• In support of project • Indifferent • Against the project

Source: Adopted from Molwus (2014)

In this study, the classification model of internal and external stakeholders is similarly adopted to solve the multidimensionality problem. The internal stakeholders are the participants constituting the project coalition or providing fund for the endeavour, and the external stakeholders are the others who are notably interested, experience the impacts, or exercise responsibilities in project (Mostafa and El-Gohary, 2015; Winch and Bonke, 2002; Calvert, 1995). The internal stakeholders comprise project owners, clients, financiers, project leaders, contractors, subcontractors, suppliers, and designers (Moura and Teixeira, 2010; Olander, 2003; Manowong and Ogunlana, 2010). The ESGs are discussed in the sub-sections following.

3.3.1 External Stakeholder Grouping

The ESGs commonly found with construction projects are illustrated in Figure 3.5. The ESGs are in line with Cleland's (1988) classification: (i) GAs [agencies, commissions, judicial, legislative and executive branches], (ii) GP [represented through consumer, environmental, social, political, and "intervenor" groups] and (iii) ALCs.

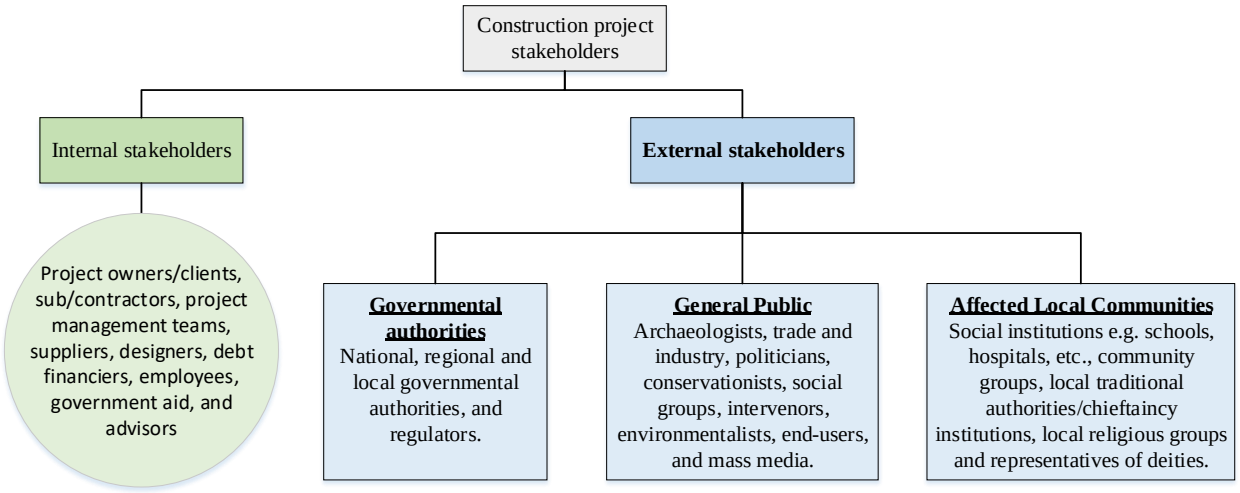

Figure 3.5 Project external stakeholder groups
Adapted from Chan and Oppong (2017)

3.3.1.1 Governmental Authorities

Governmental administrations are conducted at the regional, local and national levels to ensure more collaboration with the people and efficiency of project delivery. The regulatory agencies that manage the operation of construction projects also operate under the GAs. The activities in the GCI are managed by regulations and codes that guarantee that issues are handled in the most efficient and effective manner. All required approvals for project development in the built environment are obtained from the GAs. Largely, the GAs can delay or speed up construction works. For instance, the delays in the Trans Alaska Pipeline project, which was supervised by the

State Pipeline Coordinator, the Council of Environmental Quality, and the Joint Fish and Wildlife Advisory Team, were partly attributed to impatience with environmental safeguards that eventually led to the violation of state and federal rules (Kharbanda and Stallworthy, 1983). It is therefore relevant to realise and manage the expectations of the GAs in project development.

3.3.1.2 General Public

The generic stakeholder definition given by Freeman (1984) implies that everyone could be stakeholder of organisations. For instance, the definition includes the environment, terrorists, blackmailers and thieves within the domains of organisations as stakeholders (Jensen, 2001). The GP may at times be considered as the clients given that they are the customers or end-users of the delivered projects, with substantial resources and power to influence project delivery (Atkin and Skitmore, 2008). In the project cases from developing countries (Chapter 4), the GP stakeholders are found to be critical in influencing project development. In the MWDP and STX housing project particularly, the GP raised concerns and used their power to stall project at the PS. Hence, it is necessary to incorporate the GP in projects to ensure successful delivery.

3.3.1.3 Affected Local Communities

The ALCs use political and non-political actions to stall project progress where they feel affected without necessarily being liable for the consequences (Chinyio and Olomolaiye, 2010). Although projects may have obtained all legal permits required to be implemented, they could still be opposed by ALCs and other non-contractual stakeholders due to the lack of "social license". The "social license" is granted by these multi-stakeholders on daily basis throughout the project lifecycle (Boutilier and Zdziarski, 2017). Thus, ALCs continuously wield their influences on project development process even during the in-use stage. The ALCs feel the direct impact of the project including all forms of pollution, vibrations, traffic diversion effects, etc. Besides, they may

also expect to increase their business prospects through project implementation. In Ghana particularly, the traditional authorities (i.e. local religious leaders, local chiefs, extended family heads, and 'big men' occupying positions with traditional duties) are found to be very important for successful project delivery (Dansoh et al., 2019; Ezeabasili et al., 2015). The traditional authorities have legitimacy entrenched in invented history, real history and culture, and perform "legislative, executive and adjudicatory" roles (Abotsi and Galizzi, 2011). The issues of the traditional authorities in project development include their power and role, expectations, project effects on community resources, and cultural and religious values (Dansoh et al., 2019). The ALCs are able to impress their interests and expectations on the project since they are directly impacted by the development.

3.4 STAKEHOLDER ANALYSIS AND ENGAGEMENT

In the construction industry, no project can be successfully delivered without given due consideration to the relevant internal and external stakeholder environments that the project is embedded in. Many researchers have acknowledged that essential relationships exist between the stakeholders and organisations, which have the tendency of determining the fate of projects (Freeman, 1984; Rowley, 1997; Mitchell et al., 1997). Given the relationships, it has become very crucial to continually analyse and engage stakeholders in project planning and implementation. This enables the PMs to apply appropriate strategies to address stakeholder issues and reach success.

Stakeholder analysis is considered to be an essential element of the SM process (Olander, 2006). It is a way of identifying relevant stakeholders and corresponding interests, and evaluating their influences and interrelationships (Varvasovszky and Brugha, 2000). According to Reed (2008), stakeholder analysis is undertaken in three steps, viz; stakeholder identification, stakeholder

differentiation and categorization, and investigation of stakeholder interrelationships. In a similar vein, Yang et al. (2011b) investigated SM approaches following three steps: (1) identifying stakeholders and corresponding interests; (2) analysing relationships of stakeholders; and (3) analysing the influences of stakeholders. Stakeholder analysis is very important for the PMs to devise the right strategies to handle stakeholders.

IFC (2007) defines stakeholder engagement as an extensive and continuous process of interactions between the organisation and its stakeholders, and it covers diverse activities and approaches over the entire project duration. The nature of engagement varies based on the intensity and the number of participants involved (Figure 3.6). The major components of an effective stakeholder engagement process entail identifying and analysing stakeholders, disclosing information to stakeholders, consulting stakeholders, negotiating and partnering with stakeholders, managing stakeholder grievances, involving stakeholders in project monitoring, providing feedback to the stakeholders, and undertaking management functions (IFC, 2007). Project success could possibly be reached if PMs engage the stakeholders at the appropriate intensity so they can make necessary contributions to the project and receive corresponding rewards.

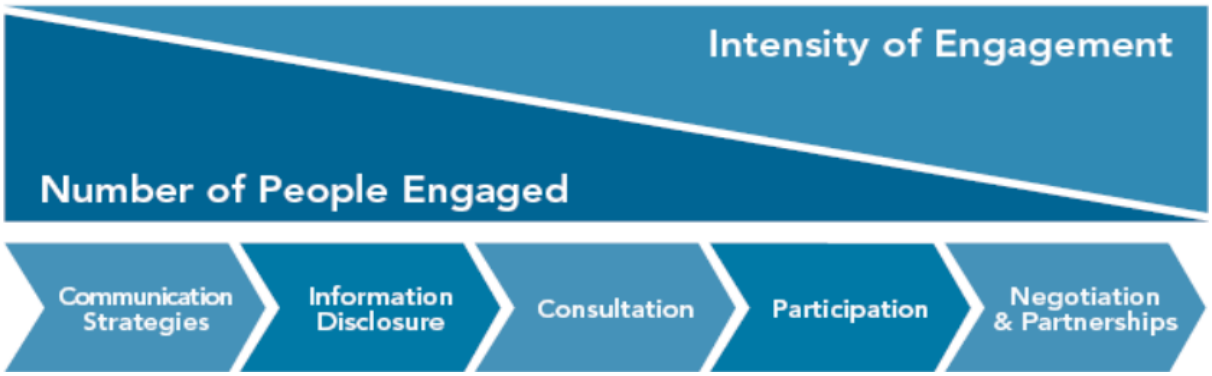

Figure 3.6 Stakeholder engagement spectrum

Adopted from IFC (2007)

Table 3.4 elaborates how the PMs can relate with diverse stakeholders depending on the level at which the stakeholders are involved. For instance, the PMs may provide the stakeholders with trustworthy project information through one-way communication channels such as press release, TV, or newsletters where stakeholders' inputs are not required.

Table 3.4 Ways of relating to stakeholders

	Type of relations	Description	Stakeholders influence in decisions	Actions	When to use
Least	Giving information	Stakeholders are informed about the project	None	▪ Press release, TV ▪ Newsletters	Information not controversial/trust
	Gathering information	Stakeholders provide information to help decisions, but don't participate	Very little	▪ Questionnaires ▪ Interviews ▪ Surveys	Reliance on the use of information
Level of involvement	Consultation	Stakeholders are consulted but don't participate in decisions	Limited	▪ Written comments ▪ Interactive meetings	Stakeholders trust in decision-making process
	Participation	Decision-making process is shared with some specific stakeholders	Can influence specific subject or issue	▪ Workshops ▪ Topic groups ▪ Round table meetings	Willingness and ability accept influence of outcome
	Bounder dialogue	Decision is taken together after dialoguing within some pre-set conditions	Stakeholders fully involved with some pre-set constraints	▪ The above processes in a pre-planned and coherent way, eventually facilitated by mediators	▪ All solutions are possible, within pre-fixed parameters
Most	Open dialogue	Decision is taken together	Stakeholders fully involved in decisions		▪ Wider and complex problems, with open outcomes

Note: Adopted from Eurosite (2003), cited by Moura and Teixeira (2010)

Missonier and Loufrani-Fedida (2014) developed a morphological approach for analysing and engaging stakeholders at the PS of projects (Table 3.5). This approach is embedded in "strong relational ontology" and seeks to integrate both the dynamic and emergent nature of the stakeholder networks (Slife, 2004). At the first step, the morphology of project stakeholder networks is analysed in order to quantify the networks' degree of convergence. Following, the second step seeks to visualise the evolution of stakeholder networks across a duration. This process

of analysis and engagement can be seen as a consensus building process in a multidimensional interaction fashion where one stakeholder group assigns others a role (Missonier and Loufrani-Fedida, 2014).

Table 3.5 Morphological stakeholder network analysis (front-end)

	Stakeholder analysis		**Stakeholder engagement**	
	Stages	**Content**	**Stages**	**Content**
First step: Morphological stakeholder network analysis (front-end)	(1) Identify stakeholders and analyse stakeholder relationships	▪ Poles (status and roles) ▪ Intermediaries (what is produced, will produce and put into circulation by actors): nature, diversity, amount, and frequency	(A) Problematisation	▪ Framing the problems, identifying other relevant actors, and highlighting how the problem affects the other actors
	(2) Identify stakeholder interests	▪ Interessement (identifying factors interests of members of poles in the project and devices)	(B) Interessement and enrolment	▪ Ability of an actor to arouse the interest of others for his own project ▪ Assign a role to each pole
	(3) Assess stakeholder influence	▪ Identifying degree of convergence of the network (degree of alignment of interests and goals, degree of coordination)	(C) Mobilization	▪ Stabilization of the stakeholders
Second step: Dynamic stakeholder analysis (over the project)	(4) Identify controversies	▪ Nature, i.e. the subject of the controversy and its stakes ▪ Actants involved ▪ Stabilization whether a compromise seems to have been reached or not ▪ Redefinition of the technical object	If necessary reengage the process of translation (A–B–C)	▪ Problematisation–interessement–enrolment–mobilization
	(5) Analyse effects of controversies on stakeholder network	Effects on the network		

Source: Adopted from Missonier and Loufrani-Fedida (2014)

A lot of practical approaches for engaging and analysing stakeholders have been discussed in literature. Yang et al. (2011b) identified 30 approaches that can be applied by practitioners in

engaging and analysing stakeholders (Table 3.6). PMs may choose to combine two or more approaches at a time depending on their strengths and weaknesses and the intensity of engagement required. For instance, since most stakeholders will not be able to directly participate in structured engagement platforms, an approach like "door knocks" will be good to identify and engage stakeholders broadly although it may not be intense.

Table 3.6 Stakeholder analysis and engagement approaches in construction

Approaches	Stakeholder analysis			
	Identifying stakeholders and their interests	**Assessing stakeholders' influence**	**Analysing stakeholders' relationships**	**Stakeholder engagement**
▪ Construction advice letters				❖
▪ Darzin (a software tool)	❖			❖
▪ Directed by higher authorities	❖	❖	❖	
▪ Displays and exhibits	❖			❖
▪ Door knocks	❖			❖
▪ E-mail/mail/fax/phone	❖		❖	❖
▪ Feedback bulletins				❖
▪ Focus groups	❖	❖		❖
▪ Formal memos		❖		
▪ Forums	❖		❖	❖
▪ Guidelines	❖			
▪ Information hotline	❖			❖
▪ Interviews	❖	❖	❖	❖
▪ Listening post	❖		❖	❖
▪ Media management				❖
▪ Meetings	❖	❖	❖	❖
▪ Negotiations				❖
▪ Newsletters/postcard series/fact sheets				❖
▪ Open house/open day	❖		❖	❖
▪ Personal past experience	❖		❖	
▪ Power/interest matrix		❖		
▪ Professional services	❖	❖	❖	❖
▪ Questionnaires and surveys	❖	❖		❖
▪ Snowball	❖			
▪ Social contacts	❖		❖	❖
▪ Social network analysis	❖	❖	❖	❖
▪ Stakeholder Circle (a stakeholder management methodology)	❖	❖		❖
▪ Walking tour/site tour				❖
▪ Website				❖
▪ Workshops	❖		❖	❖

Note: Adopted from Yang et al. (2011b)

Asides, Chinyio and Akintoye (2008) proposed two sets of approaches that PMs can use to engage stakeholders (Table 3.7). The overarching approaches include being proactive and responding to the power-interest dynamics in the PSE, whiles the operational approaches include management and negotiation skills, effective communication, and provision of incentives. The PMs have the option of combining approaches from the two sets to engage stakeholders as may be appropriate for each project.

Table 3.7 Stakeholder engagement approaches

Overarching approaches	**Operational approaches**
	Use of:
✓ Systematic approach	✓ Effective communication
✓ Providing top-level support	✓ People skills—management
✓ Being proactive	✓ People skills—negotiations
✓ Maintaining existing relationships	✓ Trade-offs
✓ Responding to power-interest dynamism	✓ Incentives
	✓ Concessions
	✓ Workshops and meetings
	✓ Intuition

Note: Adopted from Chinyio and Akintoye (2008)

The focus of this study is ESM and therefore, stakeholder analysis and engagement are very essential. This study focused on improving ESM by properly incorporating the ESGs and managing their expectations. The above discussed approaches may be considered by the PMs in managing the ESGs in the GCI.

3.5 STAKEHOLDER MANAGEMENT PROCESSES

According to Cleland (1988), SM entails the execution of repetitive management functions including planning, organising, motivating, directing and controlling resources employed to handle ESGs. He further emphasized that these management functions are interconnected and iterative in nature, thus, when new stakeholders show up in project, there will be the need to repeat

the whole process. The management functions are continual, adaptable to new stakeholder threats and opportunities, and can vary the strategies adopted on existing stakeholders (Cleland, 1988).

Cleland (1999) also emphasized that the principal justification for adopting project SM is the immense nature of the influence that ESGs can exert on projects. Further, the extent to which projects accomplish set goals and objectives is greatly affected by the actions of the ESGs. Therefore, SM focused on the cooperation of ESGs enhances the achievement of project objectives, while neglecting stakeholders hinders it. It is assumed that the success of any project is dependent on considering the potential impacts of project decisions on all related stakeholders across the life cycle (Cleland, 1999).

The stakeholder theory requires PMs not to be oblivious of the dynamics in the PSE at different times of project duration (Cleland, 1988). As such, the fundamental values of SM process include helping PMs foresee how project stakeholders will react to decisions, how such reactions will influence the project, and the interrelationships in the PSE, which eventually affect success (Cleland, 1988). Karlsen (2002) realised that PMs adopting SM process in construction projects helps to build stakeholder relationships and attain balance among stakeholder contributions and rewards. Likewise, it establishes the basis for managing project stakeholders, determine who should be included, and how success should be measured (Karlsen, 2002). The objectives of project SM include the following (Mathur et al., 2008; Mahato and Ogunlana, 2011; Vos and Achterkamp, 2006; El-Gohary et al., 2006):

1. Achieve integrated and collaborative project solutions;
2. Enhance local decision making;
3. Increase stakeholders' sense of belongingness and ownership of project;
4. Encourage innovation in project development.

Cleland (1999) stated that the SM objectives could only be attained by incorporating stakeholder opinions into the project's formulation process and developing a workable strategy for SM. Project SM is expected to provide practitioners with sufficient intelligence to choose realistic options that will create values for the stakeholders (Cleland, 1999). The SM processes and activities identified in literature are shown in Table 3.8.

Previous studies depict how authors either focused on a few aspects of SM process or considered some several aspects that are incoherent and inapplicable in real-world projects (Yang et al., 2009a). For instance, the model presented by Cleland (1988; 1999) failed in realizing that the continuous monitoring of implemented strategies is indispensable for effective SM. Karlsen's (2002) process also did not acknowledge the need of gathering stakeholder information although it is essential. Young (2006) responded with a model that addresses the issue of stakeholder information gathering. However, the model was too simple and could not acknowledge many relevant processes such as preliminary planning of objectives and resources and time commitments to be made. Besides, Yang and Shen (2015) proposed the evaluation of the SS level with the engagement activities. However, the evaluation process was not clearly demonstrated to be reliable and objective for consistent application in projects.

Many fragmentary models have been identified in literature and yet most of them are not fully applicable in real-construction projects (Karlsen, 2002). The reason is that uneven and informal models do not suffice the management of complications in construction PSEs (Mok et al., 2015; Burton and Obel, 2003). Notably, most project stakeholders are external and beyond the power and control of PMs. This situation inhibits the implementation of some SM activities in project and presents a daunting task to PMs (Bourne and Walker, 2005).

Table 3.8 Stakeholder management activities and processes in projects

Scholars	Stakeholder management processes or activities
Karlsen (2002)	Identification of stakeholders; analysing the stakeholders; communicating and sharing information about stakeholders; developing strategies, and 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 SM capability of the R&D projects; and analysing the dynamics of stakeholders.
Young (2006)	Identifying stakeholders; gathering information about stakeholders; and analysing the stakeholder influence.
Bourne and Walker (2005) adopted by Bourne and Walker (2006)	Identifying stakeholders; prioritizing stakeholders; developing a stakeholder engagement strategy; and implement SM strategy.
Cleland (1988) adopted by Cleland (1999) and Olander (2006)	Identification of stakeholders; gathering information on stakeholders; identifying stakeholder mission; determining stakeholder strengths and weakness; identifying stakeholder strategy; predicting stakeholder behaviour; and implementing SM strategy.
Walker et al. (2008)	Identifying stakeholder; prioritizing stakeholders; visualizing stakeholders; engaging stakeholders; and monitoring effectiveness of communication.
Jepsen and Eskerod (2009)	Identification of the (important) stakeholders; characterization of the stakeholders pointing out their needed contributions, expectations concerning rewards for contributions, and power in relation to the project; and decision about which strategy to use to influence each stakeholder.
Oyegoke (2010)	Early identification of the stakeholders; identify potential conflict areas; educate stakeholders on potential risks and harms and how they are mitigated, and potential gains; engage with the stakeholders – communication line; involve other entities, especially government and show that due process is followed; and managing the process.
Manowong and Ogunlana (2010)	Investigation, identification, and classification of stakeholders and corresponding potentials and expectations; building and sustaining good relationship through effective two-way communication; attain effective stakeholder commitment and support for high performance; and assure maximum satisfaction of stakeholders.
Henjewele et al. (2013)	Identify stakeholders; prioritize stakeholders; build relationships; identify and manage concerns and conflicts; and manage communications.
Yang and Shen (2015)	Precondition of managing stakeholders with social responsibilities; stakeholder identification; stakeholder assessment; decision making; action and evaluation; and continuous support.
Yitment (2015)	Planning activities regarding the process; identification of potential stakeholders; analysing stakeholders in relation to selected issues; communication of the stakeholder assessment to both project and management; developing implementation strategies for dealing with stakeholders; and following-up the strategies and actions that have been implemented.
Park et al. (2017)	Clear understanding of stakeholders; effective communication; clear definition of project; responding to environmental changes; and social cooperation.
Eskerod and Jepsen (2013)	Stakeholder identification; stakeholder assessment; and stakeholder prioritization

Note: Adopted and expanded from Yang et al. (2011a)

Based on the prior discussions, the PMs have been depending on random SM approaches in handling the project stakeholders. The fragmentary ideas from the different models have been

consolidated into 8 activities that are representative of the general SM process for typical construction projects in previous studies. The SM activities are shown in Table 3.9.

Table 3.9 Stakeholder management processes/activities in construction

SM processes/activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Preliminary planning	❖													❖	❖	❖	
Identifying stakeholders and gathering information about them	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖
Understanding the mission of stakeholders		❖				❖	❖	❖				❖			❖		
Analysing stakeholder characteristics and communicating outcomes	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖
Anticipating stakeholder behaviours and outcomes						❖	❖	❖						❖			
Developing and implementing management strategies	❖	❖		❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	❖	
Responding to the dynamics in stakeholder environment		❖												❖	❖		
Monitoring the effectiveness of the strategies implemented	❖								❖		❖	❖		❖	❖	❖	

Note: "1= Karlsen, 2002", "2= Elias et al., 2002", "3= Young, 2006", "4= Bourne and Walker, 2005", "5= Bourne and Walker, 2006", "6= Cleland, 1988", "7= Cleland, 1999", "8= Olander, 2006", "9= Walker et al., 2008", "10= Jepsen and Eskerod, 2009", "11= Oyegoke, 2010", "12= Manowong and Ogunlana, 2010", "13= Henjewele et al., 2013", "14= Yang and Shen, 2015", "15= Park et al., 2017", "16= Yitmen, 2015", "17= Eskerod and Jepsen, 2013".

3.5.1 Preliminary Planning

At this stage, the PMs are interested in clarifying the goals and objectives of the project. It allows for future stakeholder expectations and interests to be properly aligned to the project purpose (Karlsen, 2002; Jergeas et al., 2000). Arguably, claims that align with objectives are urgent and therefore likely to be implemented (Aaltonen and Kujala, 2010). Such objectives may include creating and sustaining project stakeholder relationships, minimizing destructive conflicts, ensuring long-term participation of stakeholders, and obtaining stakeholder buy-in of the project (Olander and Landin, 2008; Cleland, 1988; Mathur et al., 2008). Stakeholders' interests, expectations, commitments and constraints ought to be considered in setting SM objectives (Yang and Shen, 2015). For ongoing projects, SM outcomes should be re-evaluated to know if the initially

set objectives should be maintained, revised or improved (Yang and Shen, 2015). The time commitment, resource commitment and details of operation, i.e. how and when to organise operations, the frequency and necessary documentations to expedite the process, should be further clarified (Karlsen, 2002).

3.5.2 Identifying Stakeholders and Gathering Information About Them

The identification process should go beyond the stakeholders who are obvious or have once encountered the organisation in project implementation. Importantly, PMs must carefully identify all potential project stakeholders including those who are of less relevance in the present time (Cleland, 1988; Cleland, 1999; Jergeas et al., 2000; Oyegoke, 2010; Henjewele et al., 2013). Stakeholders are identified on the bases of entities or individuals who "can affect or be affected by" and "have stake in" project delivery (Freeman, 1984; Olander, 2007). Additionally, the organisation could consider reviewing its historic interfaces with the PSE to reveal a list of potential stakeholders (Freeman, 1984). Moreover, organisations should identify stakeholders by considering "strategic issues" that have been faced in the past or presently being faced (Cleland, 1988). A strategic issue is a situation or pressure, either within or without a construction project that can affect the funding, design and planning, engineering, construction, permitting and licensing, and/or the operation of the project (King, 1981). Further, the snowball approach involves requesting the identified stakeholders to name others (Yang et al., 2009a) in the setting of expert interview, brainstorming session, and using an available checklist (Karlsen, 2002).

In order to formalise the stakeholder information gathering process, Cleland (1988) recommended PMs to consider the specific information required; the origin and how to get it; who is to gather, analyse, interpret and report it; distribution platforms and who can have access; who can use it; and how it should be protected from leakage or misuse. The sensitive stakeholder information

gathered should be ethically embraced and used (Cleland, 1988). According to Yang and Shen (2015), the information includes contacts, interests, needs, commitment and constraints.

3.5.3 Understanding the Mission of Stakeholders

In understanding the missions of the stakeholders, PMs have to create a platform to interact with the stakeholders. Some of the stakeholders may be in support of the project whiles others may deliberately show up to obstruct progress. In modern times, stakeholders have the opportunity to present their expectations and concerns through engagement platforms to ensure collaborative construction project delivery (Henjewele et al., 2013). Essentially, the PMs are advised to supply sufficient project information to supportive stakeholders, whiles the adversary stakeholders should be embraced as they could obstruct project progress (Cleland, 1988). Identifying stakeholders' missions is a precondition for devising appropriate strategies aimed at maximizing their best and minimizing their worst influence in project. As such, the communication channels with stakeholders should be open and allow for two-way information transfer. This will enhance mutual access and control over information (Cleland, 1988).

3.5.4 Analysing Stakeholder Characteristics and Communicating Outcomes

The stakeholder characteristics to be considered encompass their strengths and weaknesses; opportunities and threats; interests, attitudes and attributes; relationships; stakeholder contributions; expected stakeholder rewards; domains; and possible network positional changes (Cleland, 1988; Karlsen, 2002; Henjewele et al., 2013; Yang and Shen, 2015). The adversarial stakeholders' strengths are underlined by effective resource usage, political and public support, quality of strategies, and group member dedication. Inversely, the weaknesses are founded on lack of political support, poor organisation, incoherent strategy, inadequate commitment, and inefficient resource usage (Cleland, 1988).

In CEM literature, the tools used for analysing the multi-dimensional stakeholder characteristics include: stakeholder impact index (Olander, 2007); SNA (Rowley, 1997); power/interest matrix (Olander and Landin, 2008); and stakeholder influence matrix (Young, 2006). The stated analytical tools are used to explore different stakeholder characteristics which contribute to the decision-making process. For example, the analysis could help in classifying stakeholders into supportive, marginal, non-supportive, and mixed blessing stakeholders, depending on their relationships with the project (Savage et al., 1991). It is important for the analysis results to be properly communicated to higher management and among fellow practitioners in a systematic manner (Jergeas et al., 2000). Reaching a common understanding of issues in the PSE is crucial to ensure corporate development and implementation of workable strategies (Karlsen, 2002).

3.5.5 Anticipating Stakeholder Behaviours and Reactions

Cleland (1999) admitted that PMs predicting the potential behaviour of stakeholders in project is very important. The PMs can subsequently understand stakeholders' readiness and capacity to influence project outcomes (Savage et al., 1991). The behaviours of stakeholders are described as observed behaviour, competitive threat, cooperative potential and opposite position; or are classified in line with the supportiveness and receptiveness level (Freeman, 1984; Yang and Shen, 2015). Freeman et al. (2007) acknowledged that the effectiveness of SM process is dependent on the PMs understanding all the forms of stakeholder behaviour and reaction in specific project contexts. Stakeholders use strategies including (in-)direct withholding and direct actions to shape their saliency in projects (Aaltonen et al., 2008). The saliency of stakeholders is the extent to which PMs prioritize the competing demands and claims of stakeholders in projects (Mitchell et al., 1997). Hence, PMs accurately predicting the behaviours and reactions of stakeholders could lead to management success due to the implementation of the right strategies.

3.5.6 Developing and Implementing Management Strategies

The PMs develop strategies to counteract or align stakeholders' demands and claims with the goals and objectives of the project based on their adversarial or supportive stakes. Karlsen (2002) opined that although different SM strategies are open to the PMs, the chosen strategy should be seen as an attitude by which the PMs treat stakeholders. Therefore, organisation instituting policies that require active SM is very important for the implementation of the strategies (Cleland, 1988). Such policies will be built into the attitudes of the PMs to adopt proactive SM approach. Consequently, this helps curtail the unpreparedness of PMs towards the adverse actions of stakeholders. Aside, establishing policies, operations, procedures, and time and resources allocation helps ensure continuity of activities (Cleland, 1988).

Yang and Shen (2015) advocated that PMs should establish a workable mechanism, engage stakeholders and sustain relationships, and obtain higher management support to assist the management process. Aaltonen and Sivonen (2009) revealed that PMs can adopt the influence, dismissal, avoidance, compromising and adaptation strategies as response mechanisms towards stakeholder actions. Moreover, Savage et al. (1991) identified the involvement, monitoring, defensive and collaborative strategies to handle stakeholders with diverse characteristics. If the strategies are implemented accurately, adversarial stakeholders could be transformed into supportive stakeholders for the benefit of project.

3.5.7 Responding to the Dynamics in Stakeholder Environment

The dynamics in the PSE of construction has been wildly acknowledged in CEM literature (Yang et al., 2009b; Yang and Shen, 2015; Henjewele et al., 2013). In the construction industry, stakeholders and their information, interests and influences vary within the PSE depending on the strategic issues faced (Freeman, 1984). The changes in the PSE cannot be disregarded lest

stakeholder theory will be of little value. This is because the organisation will more often strive for a win-lose situation: it will be interested in maximizing project benefits at the expense of the negative impacts on stakeholders. The dynamics in the PSE could be explained by the complexities and uncertainties of construction project development (Yang et al., 2009b; Park et al., 2017). The uncertainties in the management process include who the stakeholders are, their influences and expectations, and the implications of their relationships in projects (Ward and Chapman, 2008). It is therefore required of PMs to make allowance for flexibility in the present strategies and establish backup plans to deal with any consequences of changes within the PSE in the most proactive way. Yang and Shen (2015) suggested that the changes could also be recognized by contrasting the SM activities and methods with historical records. Simply, if stakeholder interactions with the organisation changes, the organisation should consider devising a new strategy (Karlsen, 2002).

3.5.8 Monitoring the Effectiveness of Strategies Implemented

This stage brings to close one complete cycle of SM process. Karlsen (2002) recommended carrying out follow-up activities to realise if the implemented strategies and actions are functioning well. Also, the outcomes of implementing the SM strategies should be assessed based on the mutual satisfaction attained by stakeholders (Yang and Shen, 2015). Besides, targets could be established to know if the SM strategies implemented are producing good results. For example, the purposes of SM in construction projects include addressing stakeholders' diverse views, improving communication among stakeholders, and clarifying their needs (Freeman, 1984; Mitchell et al., 1997). These purposes could be evaluated at predetermined periods to realise the areas that require upgrading to reach the expected levels.

3.6 OVERVIEW OF CONSTRUCTION STAKEHOLDER MANAGEMENT LITERATURE

Due to the great amount of work done by scholars in construction SM field, there is the need for a systematic review of related publications. This expectedly revealed the trends of research and the gaps that ought to be explored in this study.

3.6.1 Paper Selection from Journals

A three-stage criterion was adopted to retrieve, select, and analyse construction SM research articles in line with SCImago and Chau's (1997) journal rankings. The rule [("stakeholder" OR project participant") AND ("construction project" OR "infrastructure project" OR "civil engineering project" OR "construction management" OR "infrastructure management" OR "civil engineering management")] was searched in Scopus and ABI/INFORM Complete via ProQuest journal databases for a time range of 1984 to 2016. After a thorough filtering process, only 152 publications were retained for the systematic review (Table 3.10).

Table 3.10 Journal distribution of retrieved papers

Journals	No. of publications	Percentage
Construction Management and Economics	26	17.11
International Journal of Project Management	26	17.11
Journal of Construction Engineering and Management	14	9.21
Journal of Management in Engineering	12	7.89
International Journal of Construction Management	9	5.92
Project Management Journal	7	4.61
Built Environment Project and Asset Management	6	3.95
Facilities	6	3.95
Habitat International	5	3.29
Construction Innovation	3	1.97
Engineering Construction and Architectural Management	3	1.97
Architectural Engineering and Design Management	2	1.32
Building Research and Information	2	1.32
Journal of Information Technology in Construction	2	1.32
Proceedings of the ICE-Municipal Engineer	2	1.32
Asia Pacific Viewpoint	1	0.66
Australian Geographer	1	0.66

Automation in Construction	1	0.66
Baltic Journal of Management	1	0.66
Disaster Prevention and Management	1	0.66
Ecology and society	1	0.66
Engineering Management Journal	1	0.66
Environment and Planning	1	0.66
Environmental Impact Assessment Review	1	0.66
International Development Planning Review	1	0.66
International Journal of Innovation and Technology Management	1	0.66
Journal of Applied Sciences	1	0.66
Journal of Civil Engineering and Management	1	0.66
Journal of Engineering, Design and Technology	1	0.66
Journal of Environmental Management	1	0.66
Journal of Facilities Management	1	0.66
Journal of Financial Management of Property and Construction	1	0.66
Journal of Infrastructure Systems	1	0.66
Journal of Management Development	1	0.66
Journal of Transport Geography	1	0.66
Land Use Policy	1	0.66
Ocean and Coastal Management	1	0.66
Proceedings of the ICE-Civil Engineering	1	0.66
Public Works Management and Policy	1	0.66
Sustainability	1	0.66
Sustainable Development	1	0.66
Total Quality Management and Business Excellence	1	0.66
Total	*152*	100.00

3.6.2 Major Themes Covered by Past Research

Basically, no sophisticated statistical technique was engaged to analyse the data. The analysis of the major research themes was rather conducted manually and subjectively based on the similarities in the titles, abstracts, keywords and contents of the identified publications. In fact, the subjective analysis obtained more simplified themes that are very similar to previous research findings (Yang et al., 2009a; Mok et al., 2015). For instance, research publications that centred more on stakeholder participation, involvement and engagement were represented conveniently by “stakeholder relationships” as they are focused on relationship building with the stakeholder

environment. However, due to the potential of a publication relating to multiple themes, the researcher assigned each publication only to the most dominant theme. Following the same principle, the topics were grouped into five major themes, viz; stakeholder relationships, SM models, stakeholder interests and conflicts, management performance, and stakeholder analysis. The research themes covered and the consolidated sub-topics are presented in Table 3.11.

Table 3.11 Research themes and sub-topics covered in previous studies

Research themes	Sub-topics
stakeholder relationships (42 articles, 27.63%)	Stakeholder participation forms, benefits, requirements and barriers; stakeholder involvement; communication; building trust in relationships; ethical relationships; relationship management; stakeholder consultation attitudes; stakeholder attributes and behaviours; online stakeholder interactions; cross-cultural sense-making; multi-organisational relations; stakeholder motivation; response strategies; stakeholder dynamics and responsibility; stakeholder engagement approaches; factors of preparing public engagement; stakeholder influence strategies; stakeholder salience.
Stakeholder management models (27 articles, 17.76%)	SM knowledge-based computer models; social responsibility models; SM success frameworks; project uncertainty management process framework; network for sustainable implementation; value-oriented corporate social performance models; SM processes; stakeholder involvement process model; systematic public participation framework; stakeholder value framework; sustainability engagement process; decision-making model; conflict dynamics model; SM through empowerment model.
Stakeholder interests and conflicts (21 articles, 13.82%)	Stakeholder opposition and political opportunity; managing stakeholder interests and needs; stakeholder interface management; stakeholder conflict and consensus; client requirements; stakeholder dynamics; stakeholder briefing; stakeholder benefits realization management; stakeholder understanding and interpretation of issues; conflict analysis/management.
Stakeholder management performance (34 articles, 22.36%)	SM CSFs; public engagement critical factors; communication influence on SM performance; impact of stakeholder behaviour/commitment on project success; stakeholder innovation diffusion; stakeholder expectations and experience, SS; multi-firm satisfaction; stakeholder-oriented project implementation; key stakeholders' performance; factors affecting SM; effectiveness/improvement of stakeholder engagement.
stakeholder analysis (26 articles, 17.11%)	Stakeholder impact/influence analysis; stakeholder value analysis; social benefit analysis; stakeholder priority setting; operational stakeholder analysis approaches; stakeholder mapping and visualization; stakeholder analysis challenges; dynamic and emergent stakeholder networks; effectiveness and efficiency of stakeholder analysis; empirical and rationalistic analysis.
Others (2 articles, 1.32%)	Reviews
Total (100%)	

3.6.2.1 Stakeholder Relationships

Publications under this theme have focused on presenting mechanisms and ways by which organisation and stakeholder relationships can be improved. According to Karlsen et al. (2008),

building trust through worthy behaviour, communication skills, commitment, sincerity, acting with integrity, establishing common goals, focusing on project milestone, competence and benevolence are necessary to improve relationship with project stakeholders. Storvang and Clarke (2014) added that workshops should be facilitated as socio-technical space in order to enhance the involvement of stakeholders i.e. illuminating on stakeholders' values, needs and concerns. This is intended to show if the entire project duration is a continuous space or series of socio-technical spaces with different sets of stakeholders involved across the process. Due to the nature of public-private partnership (PPP) project environment, De Schepper et al. (2014) suggested that using the dynamic dual management tools help in sharing stakeholder responsibilities to promote good relationships with stakeholders.

Reasons have been given for the poor project stakeholder relationships experienced in the industry. Close and Loosemore (2014) reported that community consultation is burdensome, costly and time-consuming exercise. Moreover, stakeholder communities are regarded as liabilities and not assets. In effect, only a handful of construction practitioners have adequate skills and experience to consult effectively (Close and Loosemore (2014). PMs are therefore encouraged to involve the social environment in the decision-making process of projects (Heravi et al., 2015). Other scholarly works that focused on project stakeholder relationships include Chinyio and Akintoye (2008), Mathur et al. (2008), Yu and Leung (2015), Li et al. (2012b); and Manawong and Ogunlana (2006).

3.6.2.2 Stakeholder Management Models

Collinge and Harty (2014) developed a stakeholder interpretation model which acknowledges how to cross-reference design proposals against various client stakeholders and interpret designs and requirements of construction stakeholders. Doloi (2012) also developed a social performance

evaluation model for infrastructure projects. SNA was engaged to evaluate the stakeholder network influence to know the corporate social performance of projects by integrating individual stakeholder perceptions. The SM framework developed by Yang and Shen (2015) is constituted by stakeholder identification, stakeholder assessment, decision making, action and evaluation, and continuous support processes, which are founded on a precondition of undertaking social responsibilities towards project stakeholders. Meanwhile, Ng et al. (2012) presented a systematic framework that advocates for merging public engagement activities into construction projects at each stage. The model of Lutzkendorf et al. (2011) links together the developer, designers and banks, and further shows financial information flow across the project participants based on comprehensive business analysis. Other models include the SM model (Yang et al., 2009b), stakeholder involvement semantic model (El-Gohary et al., 2006), the decision rule approach for modelling multi-stakeholder multi-objective decisions (Li et al., 2016), and SI-Onto-based semantic system for involving stakeholders (Mostafa and El-Gohary, 2015).

3.6.2.3 Stakeholder Interests and Conflicts

In order to properly identify and evaluate stakeholder interests and expectations, Xie et al. (2014) proposed the formulation of overall public engagement objectives, institutionalizing mechanisms and practices, implementing the working plans, and establishing the experience sharing scheme of participation. Ng et al. (2012) advocated that conducting early market research to reveal the concerns of the public about the project plans and designs is essential for effective public participation. Tang and Shen (2013) added that open and effective communication with and among stakeholders and the inputs of PMs are important for effective analysis of stakeholder needs. Stakeholders show cooperative attitudes towards PMs in high positions and can use great power to mobilise other stakeholders in projects (Yang et al., 2014).

According to Aaltonen et al. (2008), stakeholders use salience shaping strategies like (in-)indirect withholding and communication strategies to advance their expectations and interests in project. Besides, Sun et al. (2016) identified that if stakeholders have diverse and uncertain perceptions of project costs and benefits, conflicts and controversy could persist in project implementation. Therefore, construction stakeholders have to appraise the project costs and benefits, and also sustain good relationship with all stakeholders (Li et al., 2013). Loosemore (2009) opined that construction risk managers must depend on both scientific principles and human perspectives in reconciling diverse interests of stakeholders. This approach will help to reach agreements and devise strategies to handle stakeholder interests. Other scholarly works on stakeholder interests and conflicts include Jallow et al. (2014) and Tam and Tong (2011).

3.6.2.4 Stakeholder Management Performance

Olander and Landin (2008) revealed that communication of benefits and negative impacts, analysis of the needs and concerns of stakeholders, in-depth appraisal of alternate project solutions, the project organisation, and media relations affect the ESM performance in construction projects. Leung et al. (2004b) also showed that stakeholder commitment is multi-dimensional in nature, thus, different types of commitment diversely affect each participant's performance in project. For instance, disloyal structural engineers will not have great motivation to issue out the required structural drawings at the early stages, which therefore affects overall construction project performance. According to Yalegama et al. (2016), success in community-driven infrastructure projects can be attained by empowering and engaging the community environment, and appropriately measuring project management outcomes.

In PPP infrastructure projects, an implementation approach which is stakeholder oriented and close cooperation between the public and private sectors are required for success and SS (Verweij,

2015a). By implication, less interactive cooperation that involves effective monitoring of contract compliance is ideal for less complex infrastructure projects (Verweij, 2015a). In another study, Verweij (2015b) revealed that it is important for both public and private managers in PPP infrastructure projects to invest adequately into resources and capabilities for SM success. Where satisfaction is a key criterion in project performance measurement, Rashvand and Majid (2014) specified that the expectations and perceptions of clients and customers ought to be given relevant attention. Moreover, a structured approach for engaging and communicating with key stakeholders is crucial for innovation to be well diffused into construction project processes (Widén et al., 2014). Contrarily, marginalizing stakeholders does not allow them to make substantial contribution to innovation diffusion. Other scholarly works that focused on SM performance in projects include Leung et al. (2013a).

3.6.2.5 Stakeholder Analysis

Chandra and Loosemore (2010) used comparative cause mapping approach to analyse stakeholders and found out that stakeholders' influence capacity on the outcomes of the briefing process of hospital building design is limited by their relative social marginalization. With the power-interest matrix, Olander and Landin (2005) estimated the influences that ESGs exert on construction projects. Despite the abundance of approaches used in analysing stakeholders, Yang et al. (2014) suggested that concurrently using both rationalistic and empirical approaches is the best approach of stakeholder analysis. This consequently allows for comparisons to be made as there is no adequate single way to undertake stakeholder analysis. Van der Lei and Herder (2011) conducted parallel analysis and found out that the transactional analysis is by far better than conflict analysis in predicting real-time outcomes of infrastructure projects with regards to stakeholder interactions.

Nguyen et al. (2009) performed impact analysis on attributes that affect the influence of stakeholders on infrastructure projects. The influence index output shows that clients influence projects the most than other participants. The stakeholder impact index analysis indicates that stakeholders with high power are most relevant from strict project viewpoint; stakeholders with high legitimacy are more important from moral viewpoint because they are risk bearers; and stakeholders with high urgency are more crucial due to the timely obligation owed them (Olander, 2007). The typology of operational stakeholder engagement approaches implies that PMs must combine elements from different approaches e.g. combining Stakeholder Circle methodology with meetings and workshops to assess the nature of stakeholder relationships (Yang et al., 2011b). Other analytical studies include the use of multicriteria scenario analysis to reach consensus among stakeholders (Thekdi and Lambert, 2014) and axiology for analysing the total building worth (Zhang and El-Gohary, 2016).

3.6.3 Gaps Identified in Literature and Directions for This Study

The construction industries of developing countries have common characteristics including the experiences of socio-economic stress, weaknesses of the institutions, limitation of needed resources, and inadequate capacity to manage the major issues (Ofori, 2000). Developing countries are yet to fully embrace formal and systematic SM process as a requisite project management know-how to enhance construction project delivery. The present situation is because of the lack of historical documentations on the practices and activities in the industries (Eyiah-Botwe et al., 2016). Moreover, SM is practised randomly in construction project development without reference to commonly proven best practices. In effect, practitioners consider and practise only some aspects of SM with the help of mental records instead of following formal and documented procedures (Eyiah-Botwe, 2015). It is necessary to consolidate and synthesise the separate SM practices

adopted by different practitioners and organisations in the construction industries of developing countries. This will fully reveal the current state of SM experience and provide an avenue for common feasible practices to be proposed to boost project success rates and industrial growth.

Contemporary scholars have tried much to determine the expectations of stakeholders about project delivery i.e. design quality, service timeliness, communication, reliability and competence (Lai and Pang, 2010; Hartmann and Hietbrink, 2013). Comparisons have also been made between stakeholder expectations and actual project performance as a means of evaluating SS (Hartmann and Hietbrink, 2013; Li et al., 2013). Conclusion can be drawn that SS is subject to stakeholders' conflicting expectations about the outcomes of construction projects (Chinyio and Akintoye, 2008). Essentially, the consideration of stakeholders' expectations in projects contributes to their respective satisfaction. Meanwhile, limited studies have focused on comparing the expectations of project stakeholders (Li et al., 2012a, 2013, 2016). It is important for the expectations of stakeholder groups to be properly evaluated against project objectives so that the most relevant ones are met to optimize the benefits that accrue to the same (Chinyio and Akintoye, 2008). The relevance of researching the expectations of ESGs in construction projects is to enhance project management efforts towards a more economically, politically, socially and environmentally sustainable construction. Such comparisons of expectations among stakeholders would form the bases for ensuring equity, enhancing needs fulfillment and evaluating SS. Especially in developing countries where public engagement is still infantile, PMs can rely on this representative database of expectations to develop construction projects that generally ensure equity and optimize values, benefits and mutual SS. Presently, there is lack of such relevant and comprehensive research focused on the expectations of ESGs in projects of developing countries that could help PMs devise formal strategies to address them.

Olander and Landin (2008) presented a case study of the expansion of the West Coast Line through the Swedish City of Lund. This study revealed that various stakeholders created problems that hindered the project and the start of construction was actually delayed four more years than anticipated. The presupposition is that numerous obstacles hinder effective SM processes, especially at the PS whiles gathering information, analysing and engaging multi-stakeholders. Further, few studies in developing countries have shown the relevance of contextual stakeholders like traditional authorities, local religious groups and representatives of deities in project development (Buertey et al., 2016; Dansoh et al., 2019). A lot of destructive conflicts on construction projects of developing countries are attributed to such stakeholders due to their extreme power in project, local religious and cultural values, effect of project on community resources, and their ambitious expectation to have recognition and benefits in project (Ezeabasili et al., 2015; Dansoh et al., 2019). It is not surprising that construction projects face more stakeholder challenges and opposition in developing countries than in developed countries (Rwelamila et al., 2015). Moreover, Jepsen and Eskerod (2009), Aaltonen (2011), and Ward and Chapman (2008) all agree that the current stakeholder analysis guidelines and tools are difficult to apply in real-time construction projects. Meanwhile, there are limited studies focusing on the obstacles faced by PMs in the demanding and dynamic construction PSE. CEM research should pay more attention to the obstacles underlying the infamous poor performance of SM in construction projects over the past decades (Loosemore, 2006). Particularly in developing countries, the findings will be important for PMs to implement relevant strategies to manage the ESGs effectively and achieve project success.

Furthermore, little scholarly attention has been given to the objective and comprehensive assessment of SM performance in construction projects. However, recently, research into SM

performance is becoming very relevant because SS has turned out to be a significant success evaluation criterion for projects generally (Davis, 2016; Verweij, 2015a; Buertey et al., 2016). Over the years, CEM research has focused on approaches to separately produce, improve or assess the satisfaction of different stakeholder groups in projects (Masrom et al., 2013; Lehtiranta et al., 2012; El-Sawalhi and Hammad, 2015; Li et al., 2013; Molwus et al., 2017; Rashvand and Majid, 2014; Park et al., 2017; Leung et al., 2004a; Yang and Shen, 2015; Li et al., 2016; Forsythe, 2007; Nwachukwu et al., 2017; Mbachu and Nkado, 2006; Takim, 2009; Oppong et al., 2017; Yang et al., 2009b). The management strategies to improve SS and the systems to assess the satisfaction levels of stakeholders in projects were limited in several ways including the project stage, the type of stakeholders considered, the suitability of the indicators for general application, and the local industrial context. For instance, Li et al. (2013; 2016) considered the specific project concerns to evaluate the satisfaction level and decision acceptance level of ESGs in construction project development of Hong Kong. Despite the usefulness of the methodologies, the specific project concerns of ESGs cannot be replicated on separate projects in different industries to assess SS. Meanwhile, it has been suggested that mutual SS can be appropriately managed (assessed, benchmarked, monitored and upgraded) where SM objectives, SFs and PIs are adopted concurrently on project development (Oppong et al., 2017). Hence, a SM performance system that reliably and objectively uses management objectives, CSFs and KPIs to assess, monitor, benchmark and upgrade the mutual external SS level in a reliable and objective manner is still lacking in CEM research. Availability of such a performance system will help correct the subjectivity, fuzziness and discrepancies in quantifying mutual SS and further improve construction project performance considerably (Oppong et al., 2017).

A lot of models have been proposed in literature to enhance the management and evaluation of stakeholder characteristics in projects (Mitchell et al., 1997). However, most construction projects are implemented without acknowledging that SM is a dynamic and continuous process (Eskerod and Vaagaasar, 2014). It is essential to relook at construction SM from the perspective of project stages, which is limited in research. This view has been supported by Park et al. (2017) that advocated for the customization of SM practices to suit different features such as project stage. Meanwhile, the consideration of ESGs at the PS of construction projects has been indicated to be more crucial for success than their internal stakeholder counterparts (Olander and Landin, 2005). The PS is where stakeholders' positions are shaped and their influence potentials in project development are highest (Aaltonen and Kujala, 2010; Aaltonen et al., 2015). Besides, it is the most useful time to accommodate needed innovation activities, plan the project execution to optimize stakeholder values, and make critical decisions that will affect project outcomes (Kolltveit and Grønhaug, 2004; Takim, 2009). Openness, dialogue and active stakeholder engagement at the PS reduce the potential of conflicts and controversies during later stages (Aaltonen, 2011; Olander and Landin, 2008). Successful SM is accomplished by committing to structured process on long-term basis focused on identifying the stakeholders, understanding and managing their expectations, monitoring effectiveness, and continuous review of stakeholder communities (Bourne, 2012). A practice SM framework should formally recognize relationships with the vast ESGs to enhance project success. Particularly, the constant interactions with the project communities at the PS require a systematic approach to appropriately manage the relationships and expectations of the ESGs to generate more collaborative project solutions.

The gaps identified in current literature are summarized in the Table 3.12.

Table 3.12 Gaps identified in literature

Research area	Gaps in literature
General practices of SM	• Lack of historical documentation of practices in the industry forcing practitioners to use mental records • Lack of commonly proven systematic and formal SM process
Expectations and concerns of stakeholders	• Limited comparative research on the expectations and concerns among different stakeholder groups • Ineffective consideration of the differences and similarities in stakeholder expectations for project planning and development • Need for ensuring equity and mutual benefits/values in the fulfilment of stakeholder expectations
Hindrances of the SM process	• Limited research on the factors hindering external SM, particularly in developing countries
SM performance	• Lack of studies on the objective and comprehensive assessment of SM performance • Limited scholarly studies on strategies to improve SM outcomes • The objectives, success factors and performance indicators of SM were considered separately in previous studies • Previous studies are limited in several ways including the project stage, type of stakeholders considered, suitability of factors for general application, and local industry context.
SM Models	• Many previous models do not acknowledge the dynamics that occur across different stages of project • Need to focus the SM process much more at the PS as it is considered most crucial for success

3.7 CHAPTER SUMMARY

In this chapter, previous studies were reviewed generally to trace the development of the stakeholder theory and identify the models and practices of SM which formed the basis of this research. From the construction industry perspective, the systematic literature review revealed the main gaps requiring further investigation in this research. In Chapter 4, SM literature related to Ghana and other developing countries is discussed through selected case studies.

CHAPTER 4 STAKEHOLDER MANAGEMENT EXPERIENCE IN DEVELOPING COUNTRIES

4.0 INTRODUCTION

Chapter 3 traced the evolution of SM and also presented a review of SM literature in construction. In this chapter, the interest is on reviewing a few cases of stakeholder incidences in construction projects of developing countries and revealing the essence of proper ESM at the PS.

4.1 STAKEHOLDER MANAGEMENT DEVELOPMENT IN GHANA

Project development in developing countries like Ghana has faced roadblocks due to the role of stakeholders in the planning and delivery process. The progressive development of the SM process in the GCI is outlined below (Eyiah-Botwe et al., 2016):

- Architects Act, 1969 (NLCD 357): Provides regulatory framework to guide the practices of architects as project designers and leaders/managers to manage project teams successfully.
- Local Government Act, 1993 (Act 462): The Town and Country Planning Departments were mandated to control all planning and development within their domains.
- Local Government Act, 1993 (Act 467): The planning authorities and Metropolitan, Municipal and District Assemblies regulate and control physical developments. The developments must be in conformance with building codes and requirements of statutory bodies.
- Building Regulation, 1996 (LI 1630): Provides the bye-laws and regulations covering project developments.

- Ghana's Vision 2020 (1995): Highlights the sustainable principles and efficient use of local resources to accomplish rapid socio-economic growth.
- GETFund Act, 2000 (Act 581): Enforced to enhance the educational infrastructure projects.
- Public Procurement Act of Ghana, Act 663 (2003): Focused on sanitizing the GCI, providing regulatory framework for procurement of projects, and promoting competitive tendering using the separated approach rather than integration.
- 1st GETFund Consultative Meeting (February 2010): Aimed at engaging the multi-stakeholders to improve infrastructure delivery.
- Engineering Council Act, 2011(Act 819): Provides regulatory framework to guide the practices of architects as project designers and leaders/managers to manage project teams successfully.
- National Urban Policy Framework and Action (2012): Promotes the involvement of relevant multi-stakeholders to guarantee improved accountability and transparency. Also, zonal stakeholder consultation workshops aimed at reviewing and validating action plans.
- National Housing Policy (2015): Promotes the involvement of relevant multi-stakeholders in housing project decision-making process. Particularly, involving local communities and non-conventional interest groups in project.
- Construction Industry Development Authority Bill, 2015: The bill has been proposed to provide strategic leadership that will inspire sustainable development, reformation, improvement and monitoring standards in the GCI (Ofori-Kuragu et al., 2016).

All these separate efforts at structuring and improving the SM process support the need for an established and formalised SM approach in the GCI as reference for practitioners to improve project delivery.

4.2 PROJECT CASES FROM DEVELOPING COUNTRIES

SM in developing countries is very critical due to the level of industrial development and the context within which the projects are implemented (Ofori, 2000). It is therefore important to investigate typical issues within the broad PSE of construction in developing countries. Accordingly, three cases were carefully selected to cover broad range of construction projects in different countries; one is a mass housing project in Ghana; another is a PPP road project in Nigeria; and the last is a dam project in Thailand (Table 4.1). Moreover, the three cases had issues during the PS and only one was able to progress to the construction stage. It is believed that these three cases provide detailed description of the issues in the PSE of construction in developing countries.

Table 4.1 Case studies of projects in developing countries

Stakeholder context of projects in developing countries
Sources: Owusu (2012), Bokor (2011); Attobrah and Otchere-Darko (2010); Otchere-Darko (2010); Danquah Institute [DI] (n.d.) **Case 1:** [*Project:* STX Housing Project in Ghana, 2009. It was themed as "affordable housing" in order to bridge the accommodation deficit in Ghana. *Siting:* All regional capitals and major cities in the country. *Contract:* A five-year. *Scope:* 200,000 housing contract. *Cost:* $10 billion.] **Main stakeholders:** [Government of Ghana (GoG), Ministry of Water Resources Works and Housing, STX Korea, STX Engineering and Construction Ghana Limited, G.K. Airport Company, opposition political parties, Ghana Real Estate Developers' Association (GREDA), Association of Ghana Industries (AGI), Danquah Institute (DI), IMANI Ghana, data and policy analysis groups, opposition political parties, the general public, media, and others.]
• Persistent boardroom wrangling existed among the parties
• Propaganda that the GoG was more concerned about the welfare of beneficiaries of project (security agencies) than the opposition parties dominated the media
• The public regarded the project as a misplaced priority as there were more important needs to be met by the GoG
• The Koreans felt the housing project was a national agenda and should not be used for political propaganda
• The Koreans also felt the GoG had made them "irrelevant" in the project
• Perceived ineffective information flow from the Koreans to the presidency
• The Koreans perceived they were sabotaged by officials from having direct access to the presidency, and their messages got edited before reaching the president
• Rumours of corruption prevailed
• During the GoG's negotiations with STX, GREDA also presented a more lucrative proposal to the GoG to undertake the same project at 3.7 billion dollars with onsite infrastructure and amenities. However, the GoG did not consider this proposal
• Even though the project was themed as "affordable housing", the unit cost was rather too high for the beneficiaries
• Non-transparency of the contract and the project preparations raised eyebrows

- The Koreans realised that the consulting architectural concept design (prepared by another party) costed $21 million when they could have done it at a lower cost of $5 million
- The Koreans finally distanced themselves from all subsequent transaction activities
- Mistrust between the project parties became very intense, and the legal issues between the parties could not be easily resolved.
- Minority Members of Parliament (MPs) boycotted approval of the deal in parliament
- The presidency withdrew the deal before Parliament could finally approve it, and so the minority MPs felt they were justified in opposing the project
- IMANI Ghana, DI, other data and policy analysis groups, and opposition political parties raised concerns on the inappropriateness of the deal
- The concerns also included the GoG's ambiguity, constant changes and re-arrangements of project funding sources
- They also felt that the deal was not in the best interest of the citizens. They entreated the GoG to be more Ghanaian instead of apparently offering charity to private non-local entities.
- The GoG did not give detailed assurance on at least 30% local participation and technology transfer to the local parties upon completion. This was a worrying concern of GREDA and AGI
- Altogether, the GoG's ineffectiveness in making funds available, coordinating and handling the (stakeholder) issues and the multi-interests surrounding the contract led to its abrogation at the PS

Sources: MWPHC, (2000), RID (2002), Manowong and Ogunlana (2004), IUCN (2015)

Case 2: [*Project:* The Mae Wong Dam Project (MWDP). *Proposed Siting:* Mae Wong National Park, Nakhon Sawan province, Thailand. *Initiator:* The Royal Irrigation Department (RID). Project feasibility studies started in 1982. *Scope:* Mae Wong River Basin, small irrigation barrages, underground water, dams, and water storage ponds. *Estimated Cost @ 2012:* $10.7 billion (for the entire Integrated Water Management Plan of which the MWDP forms part).]

Main stakeholders: [Sueb Nakhasathien Foundation (SNF), Wildlife Fund Thailand (WFT), other NGOs, Royal Forest Department (RFD), National Environmental Board (NEB), Office of Natural Resources and Environmental Policy and Planning (ONEP), National Specialist Committee (NSC) on EHIA, RID, Department of National Parks (DNP), neighbouring localities, general public, the media, and others.]

- Over the years, the residents in the Mae Wong River Basin suffered severe flood and drought annually.
- The RID aims to provide solutions for local problems of poverty, water shortage and flooding through the MWDP. Residents were hopeful that the aim will be met and will culminate in improvement in the quality of life.
- Project feasibility studies started in 1982.
- Between 1993 and 1997, the RID held meetings with the localities neighbouring the proposed dam site. At the public hearing of about 600 attendees, it was realised that the NGOs opposing the project did not care about the plight and opinions of the local people.
- The NGOs, led by the WTF and SNF, had conflicting interests with the localities in the project development. Whiles the NGOs were mainly concerned about deforestation and disturbance of the habitation of biodiversity and therefore opposed the project altogether, the residents were concerned about poverty, water shortage and flooding that the dam could curb to a great extent. The NGOs distanced themselves from the localities by pursuing their interests at the national and regional levels.
- Even the RFD opposed the siting of the project at the national park area.
- National and local environmental conservation pressure groups jointly campaigned via the media, meetings with government agencies, and public consultations etc. against the project on the premise that it was more destructive to biodiversity.

- At the public hearing in year 2000, the controversies that arose include water shortage and flood problems, project suitability and benefits, alternative solutions, the extent of impacts, and other pertinent issues.
- The SNF and WFT, together with local environmental conservation activists, focused on preservation and conserving the biodiversity and habitations in the project location.
- The localities still felt that the NGOs opposing the project were ignorant or insensitive to the actual problems facing the localities, and they also cannot realise the contributions and benefits the project bring to the local people.
- The local people were ineffective in presenting their support to the project due to the low power base, whiles the representatives of the NGOs, who were typically academics and expert activists, were very influential in presenting their opinions. Consequently, the NGOs influenced the project far better than the local people.
- The NGOs didn't consider consulting with and responding to the real needs of the localities. The result is that the NGOs couldn't gain the support and the proprietary right to advocate on behalf of the local people who are directly affected.
- The local people were dissatisfied on the premise of poor relationship and inadequate information from the NGOs.
- The NGOs raised counter comments that the localities were misled, selfish, and tempted by the incentives that will accrue only to their communities without giving due consideration to the biodiversity and natural resources that could be depleted.
- The NGOs adopted strategic approaches to influence the related top government officials as a means of opposing the project. For instance, through a letter to the Ministry of Natural Resources and Environment (MNRE) in December 2002, the Secretary General of WTF requested the minister to embark on a revision of the earlier plans to construct the MWDP. He accentuated on the irregularities that clouded the decision to undertake the project.
- In the year 2001, the project was suspended through a resolution of the NEB in order to revise the project's feasibility study.
- In 2003, the RID re-proposed the MWDP. Even though the Strategic Environmental Assessment (SEA) was completed, it was not officially ratified.
- In 2006, heavy flooding in the Lat Yao district prompted the MNRE to re-propose the dam, and this time branded it as flood-control mechanism. However, the media and Thai civil society raised criticism and was thereby suspended by the government.
- Due to the flooding of the lower areas of Thailand in 2011, the Cabinet approved the MWDP in 2012 as a top project for flood prevention even though the Environmental Health Impact Assessment (EHIA) was not ready.
- The civil societies again opposed it upon getting to know the results of the EHIA to be unfavourable. The disagreements included poor mitigation measures against negative environmental impacts, and unclear information on MWDP siting and positive impacts.
- The NSC was re-shuffled in early 2013 to deal with the problem but observers complained that the people most concerned about the environmental impact have been ousted from the committee. The SNF wrote a letter to ONEP in September 2013 to oppose the MWDP. The NSC also visited the site in November and realised that the observations didn't match with the EHIA.
- In 2013, the SNF led a strong campaign that called on the government to scrap the WMDP and was endorsed by over 200,000 people. The government then considered revising the designs and locations again.
- On 20 November 2014, the NSC recommended to the NEB that the plans for the WMDP be dropped and was supported by the DNP. Afterwards, the government intended to start a new study on the usefulness of the WMDP for flood prevention.

Sources: ADBG (2008), World Economic Forum (2010), ADB (2007), Osa (2014), Ayodele and Sotola (2011), Uroko (2013), Arimoro (2014), Lagos State Government (2013), Arimoro (2015).

Case 3: [*Project:* Lekki Toll Road Concession Project (LTRCP), Nigeria. *Location:* Lagos. *Scope:* upgrade of about 49.5 km of the existing Epe Expressway connecting Lekki to Epe (Victoria Island), street lightings, the four-lane dual carriageway will be extended to six-lanes at some points, toll plazas, and other administrative structures. *Proposed duration:* 30 months. *Concession period:* 30 years.]
Main stakeholders: [Lagos State Government (LSG), Lekki Concession Co Ltd (LCC), social activist groups, neighbouring localities, general public, media, property owners, and others.]

- This project is the pioneering PPP road project in Nigeria procured under the Rehabilitate Operate Transfer (ROT) and Design Build Operate Transfer (DBOT) models.
- The environmental and social impact assessment report indicate that LTRCP was not going to affect the biodiversity and habitations, and hence, the public did not oppose the project on this premise.
- Due to the mix nature of the people neighbouring the LTRCP and the respect that the people have for both tradition and religion, the project was undertaken with carefulness to ensure that belief and traditional rules were not contravened.
- The project didn't have any feasible engineering alternative solutions and so works on the existing routes were expected to generate excessive traffic and further delay in travel time.
- The LSG demonstrated emphatic support and commitment towards the project implementation. Actually, there was a change in the government in 2007 but that didn't affect the project. The new LSG similarly gave the required political support and commitment to project implementation.
- The prior success of LTRCP was partly attributed to the level of participation of local content. High percentage of the funding was raised from local financial institutions and lenders. Majority of the main stakeholders to LTRCP were locally based and therefore led to the creation of about 635 short-term and 1146 long-term employment opportunities.
- However, it was reported that property value along the stretch of the LTRCP depreciated by 30% upon the LCC's planned mounting of the three toll plazas. This became a great concern for properties owners along the stretch.
- In 2010, the LCC planned to start tolling at Admiralty and the residents and users of the road protested strongly. Even though the LCC distributed leaflets to emphasize on the long-term benefit of LTRCP, the protesters were not calmed. In fact, it became a legal battle as the protesters challenged the LCC at the court that it was wrong for the tolling to commence even though only 10% of the works has been completed. According to the LCC too, it was lawful for the tolling to begin per the concession agreement.
- Social activists, political commentators, and road users raised concerns on the high fees being charged at three different toll booths. The reason is that the public stakeholders were not consulted properly at the PS which made them resist and protest against the LTRCP.
- The ownership of LCC became questionable as social activists alleged complicity on the part of some state officials. Moreover, some even alleged that the bidding process and award of concession could have been shady due to the lack of openness and transparency. It therefore became difficult for the government to gain public stakeholder support at the subsequent stages of the project.
- Social commentators and media were also agitated because the cost of LTRCP was highly outrageous as it compares too costly with other similar projects in other states within the country.
- The LSG didn't use the media well at the PS and subsequent stages to buy-in public support. The LSG rather chose to be defensive and hardly influenced the protesters to support the project. The LSG responded that the agitations of the social activists and other stakeholders against the LTRCP were politically motivated. When the LSG felt that the public who were against the tolling were being swayed to the opposition political party, the fears of losing upcoming elections forced the LSG to make a decision on buying back the concession from LCC.
- On 28 August 2013, the LSG confirmed that the concession agreement with LCC was terminated "to save motorists from paying exorbitant toll tariff on the ever busy road."
- This is a typical example of a failed PPP project arrangement in developing countries.

Figure 4.1 Nigeria Lekki toll road concession project

Source: Google images

4.3 LESSONS LEARNT FROM THE PROJECT CASES

The (proposed) sites of the LTRCP and MWDP are shown in Figures 4.1 and 4.2 respectively. Firstly, the three case studies revealed the essence of the PS in managing the diverse needs and expectation of multi-stakeholders. Both the XTS housing project and MWDP could not progress beyond the PS due to the disagreeing interests and expectations among the multi-stakeholders. In the LTRCP, issues were raised by the public and social pressure groups when they disagreed with the payment of fees at three different toll plazas on the stretch of road. The implication is that the community stakeholders were not properly consulted during the PS and the project did not meet their needs. This reflects the fact that stakeholder influences are comparatively more critical at the PS than the subsequent stages of project (Aaltonen et al., 2015).

Figure 4.2 Location of the proposed Mae Wong Dam
Source: IUCN (2015)

Besides, it is near impossibility for all project stakeholders to share common interests. The usual circumstance is that the interests and expectations of the multi-stakeholders would be discrepant. This is the underlying explanation for the conflicts in PSE. The XTS housing project revealed that there prevailed boardroom wrangling among the parties to the project. The project conflicts were magnified in the media through the discrepant concerns raised by the public. Similar situations were evinced in the MWDP and LTRCP respectively. Especially in the MWDP, the initial proposal was revised severally over decades and yet no final agreement was reached among the multi-stakeholders.

Additionally, promoting good stakeholder relationship at the PS especially is necessary for project and SM success. It was revealed in all the cases that the more powerful stakeholders pursued their interests without caring about the less powerful stakeholders. This led to the degeneration of the relationship among stakeholders. Subsequently, some stakeholders could not pursue their interests well independently. Hence, some important interests were neglected at project inception and that generated more problems at the later stages.

Moreover, it is needful for developers to properly communicate the costs and benefits of the project to the stakeholders. The stakeholders have the opportunity to conduct cost-benefit analysis that will inform their decision on supporting or opposing the project implementation. Even though the developers tried to communicate the project benefits to the community stakeholders and users of the LTRCP, the stakeholders still opposed the project probably because they realised that the impacts far exceeded the benefits that will accrue to them over time.

Other issues realised include the roles played by politics, alleged corruption, non-transparency of dealings, lack of or inadequate evaluation of alternative solutions and project impacts, etc.

4.4 CHAPTER SUMMARY

In this chapter, the progressive development of SM in the GCI was traced. Also, three project cases from Ghana, Nigeria and Thailand were investigated to reveal stakeholder issues that cloud typical construction project environments in developing countries. The cases cover a broad range of construction projects i.e. PPP toll road project, dam project, and mass housing project. The cases revealed that the PS is crucial for effective SM; stakeholder interests will always be conflicting; bad relationship among the stakeholders is detrimental to project success; and proper communication of the project costs and benefits to stakeholders is important for SM success. In

Chapter 5, literature on the expectations of ESGs, and the obstacles, CSFs and KPIs of SM are reviewed.

CHAPTER 5 REVIEW OF ESG EXPECTATIONS, OBSTACLES, SUCCESS FACTORS AND PERFORMANCE INDICATORS OF STAKEHOLDER MANAGEMENT [1]

5.0 INTRODUCTION

In Chapter 4, construction SM development in Ghana and other developing countries was reviewed. This chapter begins discussing into details the literature covering the expectations of ESGs; and the obstacles, SFs and PIs of construction SM. Upon reviewing the applicable literature, the identified factors were further conceptually modelled.

5.1 STAKEHOLDER SATISFACTION IN CONSTRUCTION PROJECTS

SS refers to "the achievement of stakeholders' pre-project expectations in the actual performance of each project stage" (Li et al., 2013, p. 124). Meanwhile, SS has become an established dimension of project success evaluation to complement the conventional dimensions of cost, time and quality (Davis, 2016). This explains why stakeholder groups regularly make efforts to influence construction project development in accordance with their expectations (Olander and Landin, 2008). It has been suggested that SS could be assessed with an index system composed of key satisfaction factors. More importantly, SS is dependent on management approaches including participation, commitment and communication rather than meeting specific objectives like cost, quality and time of construction projects (Leung et al., 2004a). Meanwhile, assessing SS is an equivalent approach for evaluating the effectiveness of stakeholder engagement exercises or even

[1] This chapter is largely based upon:

Chan, A.P.C, & Oppong, G.D. (2017). "Managing the expectations of external stakeholders in construction projects". *Engineering, Construction and Architectural Management, 24*(5), 736-756.

Oppong, G.D., Chan, A.P.C., & Dansoh, A. (2017). "A review of stakeholder management performance attributes in construction projects". *International journal of project management, 35*(6), 1037-1051.

the performance of whole projects (Li et al., 2013). This explains why SS has gained recognition as a relevant success criterion of project development (Davis, 2016). Generally, the effectiveness of the SM process in projects is reflected in the satisfaction accruing to the multi-stakeholders through realization of project benefits (Oppong et al., 2017; Di Maddaloni and Davis, 2017).

Hitherto, the concept of project success has been perceived differently by scholars and practitioners. For instance, the Sydney Opera House exceeded the proposed time and cost, but the public stakeholders were satisfied with the great engineering feat achieved and its symbolic relevance for Sydney (Lim and Mohamed, 1999). Similarly, the Thames Barrier project exceeded both initial cost and time estimates but was still regarded as an impressive engineering masterpiece for the solutions it offered (Morris and Hough, 1987). Contrastingly, the Heathrow Terminal 5 project was delivered within time, quality and cost conditions. However, there were experiences of slight commissioning problems that resulted in poor public and customer perceptions (Brady and Davies, 2010). The examples reveal the disagreeing views of construction project success. However, mutual SS is shown to be key in the definition of construction project success.

5.2 EXPECTATIONS OF EXTERNAL STAKEHOLDER GROUPS

The expectations of ESGs may be perceived as demands, concerns, interests, needs, requirements, reasons, values, project evaluation criteria, beliefs, project goals, benefits, and design principles (Zhang and El-Gohary, 2016; Lukes, 2005). In this study, the "expectations" refer to ESGs' all-inclusive requirements and expected performance of construction projects (Chinyio and Akintoye, 2008; Li et al., 2012a; Olander and Landin, 2005). The expectations of ESGs are social, environmental, technical, legal, economic, political, religious, and cultural in nature (Orr and Kennedy, 2008; Orr and Scott, 2008; Ezeabasili et al., 2015; Chan and Oppong, 2017; Ng et al., 2013; Tam and Tong, 2011). The diversity of the social, educational and political background of

ESGs influences the nature of ESG expectations and interests (Olander and Landin, 2005). The expectations of the ESGs identified from literature are shown in Table 5.1.

Li et al. (2012a; 2013; 2016) investigated the stakeholder concerns which are common with major infrastructure projects of Hong Kong including functionality and tariff acceptability to diverse groups, availability of job opportunities, technical design of building (e.g. height, aesthetics etc.), inclusion of unique local characters, compensation and relocation strategy, and green and sustainable project development. El-Gohary et al. (2006) modelled eight sub-domains of stakeholder concerns comprising the involvement programme (e.g. scope, schedule, and procedure), system performance (e.g. capacity and comfort of users), environmental (e.g. pollutions, climate change and biodiversity), safety (e.g. development and operational safety), social (e.g. accessibility of facilities, demographic impacts, and impacts on vulnerable groups), economic (e.g. impacts on businesses, land value, employment and tourism), political (e.g. taxation), and travel (e.g. accessibility and traffic management) concerns to ensure success of PPP projects.

Creighton (1999) identified groups of stakeholder concerns in projects such as economic values (e.g. project costs and benefits), proximity (e.g. nuisances and pollutions affecting project neighbours), mandate (e.g. project impacts on the environment), philosophy (e.g. project influence on religion and culture), and usage (e.g. threat to valuable and limited resources). Leung et al. (2013b) modelled conflicts and satisfaction in public engagement using political (e.g. power distribution and allocation), physical (e.g. improvement in wealth, health, comfort and convenience), informational (e.g. knowledge availability to improve understanding) and ethical (e.g. heritage conservation, religious believes and moral values) interests of stakeholders in construction development projects.

Table 5.1 Expectations of external stakeholder groups

No.	Expectations of external stakeholders	Sources
E1	[b]Economic growth and employment generation	[1],[2],[3],[4],[5],[6],[7],[9],[10],[11],[13],[14],[15],[16],[17],[18],[22],23],[25],[26],[27],[29],[30],[31],[32],[33],[35],[36],[38],[39],[40],[41],[42],[43]
E2	[a,b,c,f,i]Green/sustainable development and energy conservation	[1],[2],[3],[4],[5],[6],[9],[10],[14],[16],[17],[18],[19],[20],[21],[23],[25],[26],[27],[28],[31],[32],[33],[35],[36],[38],[39],[40]
E3	[a,f]Safety management and security	[1],[8],[11],[12],[15],[21],[27],[29],[30],[32],[33],[34],[35],[37],[38],[39],[40],[41],[42],[43]
E4	[a]Proper traffic management during project development	[2],[3],[5],[6],[7],[9],[10],[11],[14],[15],[16],[17],[18],[20], [23],[25],[26],[27],[28],[29],[31],[33],[34],[36],[43]
E5	[f,i]Incorporating accessibility facilities for the disabled groups	[11],[35],[38],[39],[40]
E6	[d,e]Enhance indigenous people's spiritual connection with land	[20],[34]
E7	[c]Preservation of biodiversity and natural resources	[1],[3],[11],[20],[21],[24],[27],[30],[31],[32],[34],[35],[38],[40],[41],[42]
E8	[a,c]Improve neighbourhood quality and stakeholder wellbeing	[1],[11],[12],[20],[24],[27],[28],[29],[32],[35],[38],[40],[41],[42],[43]
E9	[g,i]Transparency, and fulfilling regulations and standards	[1],[24],[32],[40],[41],[43]
E10	[a,b,d]Tourism attractiveness, and showcasing national identity and international reputation	[1],[5],[6],[8],[9],[11],[13],[14],[17],[18],[19],[22],[23],[25],[26],[33],[39]
E11	[a,h]Accessing and democratic sharing of project information	[24],[32],[33],[39]
E12	[c]Prevention of pollution, flooding and erosion	[1],[2],[3],[5],[6],[7],[9],[10],[11],[14],[16],[19],[20],[21],[23],[24],[25],[26],[27],[28],[30],[31],[32],[33],[34],[35],[37],[38],[40],[41]
E13	[a,b]Appropriate compensation and relocation plan/strategy	[2],[4],[13],[14],[18],[20],[23],[25],[26],[27],[30],[32],[34],[36]
E14	[b]Increased use of substitute local resources e.g. materials	[15],[33]
E15	[a,c]Promotion of intergenerational equity	[1],[24],[32],[43]
E16	[a,b]Access to social/welfare facilities and location of multi-activities	[2],[4],[5],[6],[7],[9],[10],[11],[14],[15],[16],[17],[18],[22],[23],[25],[26],[27],[28],[31],[33],[36],[37],[38],[39],[40],[41],[42]
E17	[a,d]Promotion of community cohesion and social equity	[1],[11],[20],[24],[27],[31],[32],[33],[40]
E18	[c]Environmental health and comfort e.g. interior hygiene	[1],[11],[20],[27],[32],[33],[35],[37],[38]
E19	[a,b,f]Functionality and charges affordability to users	[1],[2],[16],[18],[23],[25],[26],[27],[29],[31],[33],[38],[41],[42]
E20	[d,f]Harmonization of project with local natural setting	[2],[5],[6],[7],[8],[9],[10],[12],[13],[16],[18],[25],[26],[27],[34],[37],[40],[41]
E21	[a,b]Adaptability of development to changing societal needs	[2],[4],[5],[6],[7],[9],[10],[14],[16],[17],[18],[23],[25],[26],[28],[36],[41]
E22	[f]Technical design e.g. aesthetics, visual permeability etc.	[4],[5],[7],[9],[10],[11],[16],[17],[18],[23],[25],[26],[27],[31],[33],[35],[36],[38],[39],[41]
E23	[a,d,h]Involvement of stakeholders in design and planning process	[1],[11],[27],[32],[33],[39],[40],[41]
E24	[d]Conserving local cultural and historic heritage	[1],[2],[4],[5],[7],[8],[9],[10],[11],[12],[14],[16],[17],[18],[20],[21],[22],[23],[25],[26],[27],[31],[33],[35],[36],[37],[38],[40],[41],[42]

Adapted and consolidated from Chan and Oppong (2017)

Note: a= "social", b= "economic", c= "environmental", d= "cultural", e= "religious", f= "technical", g= "ethical", h= "informational" and i= "legal" expectations.
Note: "1=Hill and Bowen, 1997", "2=Palerm, 1999", "3=Creighton, 1999", "4=URA, 2001", "5=M-NCPPC, 2001", "6=Lu et al., 2002", "7=PD, 2003", "8=Olander and Landin, 2005", "9=Tanaka, 2005", "10=PD, 2006", "11=El-Gohary et al., 2006", "12=Olander, 2007", "13=Wang et al., 2007", "14=Tang et al., 2008", "15=Chan and Lee, 2008", "16=CEDD, 2008", "17=Tam et al., 2009", "18=Amado et al., 2009", "19=Aaltonen and Sivonen, 2009", "20=Teo, 2009", "21=Gluch and Räisänen, 2009", "22=Stenlund, 2009", "23=WKCDA, 2010", "24=Feige et al., 2011", "25=Li et al., 2012a", "26=Li et al., 2013", "27=Yang, 2014", "28=Yang et al., 2014", "29=Thekdi and Lambert, 2014", "30=Ravesteijn et al., 2014", "31=Mostafa and El-Gohary, 2015", "32=Zeng et al., 2015", "33=Almahmoud and Doloi, 2015", "34=Ezeabasili et al., 2015", "35= Zhang and El-Gohary, 2016", "36=Li et al., 2016", "37=Huemann et al., 2016", "38=Zhang and El-Gohary, 2017", "39=Mok et al., 2017", "40=Zhao et al., 2016", "41= Doloi, 2018", "42=Thekdi and Joshi, 2016", "43=Nik-Bakht and El-Diraby, 2017"

Theo (2009) noted stakeholder concerns including potential environmental destruction through the use of land, energy and raw materials; societal impact on health and wellbeing through production of waste and greenhouse gas emissions; congestion from population density and impact on infrastructure connectivity; social cohesion; indigenous land rights; cultural heritage; and spiritual connections of local people with land. Hill and Bowen (1997) also conceptually modelled the principles, mainly concerns in nature, which are required to achieve sustainability in construction project development. The principles (i.e. social, economic, technical and biophysical) include quality of life improvement, provision for cultural diversity in planning, promotion of health, promoting intergenerational equity, equity of project benefits, minimization of pollutions, optimization of resource usage, employment opportunities, affordability of services by beneficiaries, and quality and functional deliverables (Hill and Bowen, 1997).

5.3 OBSTACLES OF STAKEHOLDER MANAGEMENT

The construction industry is noted for underperformance in terms of SM owning to the complexities and uncertainties in the project environment (Loosemore, 2006; Yang et al., 2009b; Park et al., 2017). A number of factors identified as obstacles, challenges, problems, difficulties, hindrances and barriers of the SM process in projects are summarized in Table 5.2.

Yu and Leung (2015) reported that lack of public engagement guidelines, complicated administration system, inadequate resources, neglecting to elicit stakeholder inputs from the

bottom, deficient and ambiguous information, limited publicity, and hesitation to vary predetermined proposal are the barriers in typical public engagement settings. Besides, more challenges of stakeholder engagement exercises include the lack of responsible government agency, superficial environmental impact assessment (EIA), lack of participatory democracy convention, unbalanced power and interest distribution, seeing stakeholders as enemies, lack of suitable form for collating public views, information concealment, influence at public hearings, late and inadequate involvement of stakeholders in planning, and inadequate statutory processes and requirements (Tam et al., 2009, Li et al., 2012b, Manowong and Ogunlana, 2006; Mahato and Ogunlana, 2011; Shan and Yai, 2011; Close and Loosemore, 2014; Xie et al., 2014; Olander and Landin, 2005; 2008).

In Hong Kong, the public engagement exercise is limited by the routine ad hoc and bureaucratic processes, lack of technical persons who are sensitive to project impacts, difficulty in communicating adequately with the project communities, and stakeholders' reliance on petitions and protests to express opinions (Ng et al., 2014). Aside, Yitmen (2015) attributed communication problems with stakeholders to disagreeing cultural values, vague communication systems, language barriers, resistance to change, organisational problems, problems with leadership, and unsatisfactory negotiation skills. Moreover, Graham (2010) identified challenges with community consultation including viewing stakeholders as enemies, adversarial relationships of stakeholder communities with project, community protests, and mobilization of even extremist groups against project development. Besides, Olander (2007) realised that issues such as delays or bureaucracy with permitting process, lack of project management interest in responding to stakeholders and acknowledging their interests, active opposition of community people, critical press reports, and political supports could undermine the efforts of PMs in managing stakeholders.

Table 5.2 Obstacles of construction stakeholder management

S/N	Obstacles of stakeholder management	Source
B1	[d]Negative attitude of stakeholders towards project e.g. petitions or protests	[1],[2],[3],[4],[5],[6],[7],[48]
B2	[c]Unbalanced distribution of stakeholder power and interests	[8],[9]
B3	[f]Poor perceptions of managers e.g. seeing stakeholders as enemies	[3],[10],[11],[12],[48]
B4	[e]Distrust and challenging relationships making stakeholders hold back vital information	[1],[4],[6],[13],[14],[15]
B5	[e]Ineffective communication with stakeholders	[2],[3],[7],[16],[17],[48]
B6	[f]Failure to cooperate with affected and adverse stakeholders	[4],[18],[49]
B7	[a]Lack of well-functioning management strategies, methods, approach or process	[3],[7],[14],[16],[17],[19],[20],[21],[22]
B8	[b]Project complexity and multiplicity of stakeholders	[19],[23],[24],[49]
B9	[d]Stakeholders obtaining support from more powerful institutions	[1],[14],[15],[25]
B10	[d]Opportunistic political actions among stakeholder groups	[14],[15]
B11	[d]Hidden/invisible stakeholders with unseen power and influential links	[5],[26],[27],[28],[29],[48]
B12	[c]Different and competing values and beliefs of stakeholders	[30],[31];
B13	[d]Negative public opinion and media coverage of project	[1],[3],[25]
B14	[d]Stakeholders having limited knowledge of project plans and objectives	[4],[6],[23],[32],[33],[48]
B15	[a]Managers lacking required knowledge, skills and experience	[7],[11],[17],[21],[23],[27],[34],[35],[48]
B16	[f]Project organisations pursuing self-interest at the expense of stakeholders	[28],[36],[48]
B17	[f]Lack of monitoring and reporting actual conditions of affected stakeholders	[4]
B18	[f]External stakeholder environment is non-transparent and difficult to analyse	[37],[49]
B19	[f]Insufficient analysis of alternative project solutions and corresponding impacts	[1],[3],[4],[9]
B20	[f]Managers hesitating to change predetermined proposal	[17],[20]
B21	[f]Ambiguous instructions in stakeholder prioritization	[21]
B22	[e]Absence of comprehensive and effective stakeholder engagement process	[4],[9],[16],[20],[23],[28],[38],[39],[40],[41],[42],[43],[48]
B23	[b]Insufficient and unclear information at the early project stages	[1],[19],[20]
B24	[a]Insufficient resources to manage stakeholders	[9],[11],[20],[21],[23],[44],[48],[49]
B25	[d]Highly dynamic stakeholder environment	[14]
B26	[b]Excessive task conflicts that undermine collaboration	[45]
B27	[c]Misunderstanding stakeholders' conflicting interests and concerns	[1],[2],[14],[20],[25],[29],[36],[46]
B28	[d]Bureaucratic and complicated permitting process	[1],[14],[27]
B29	[e]Stakeholder involvement is burdensome and time-consuming	[7],[11],[16],[20],[23],[44],[48]
B30	[c]Intrinsic (local) cultural values at variance with project plans and objectives	[14],[31],[47]

Note: a= "management resource factors", b= "project factors", c= "interest and value factors", d= "stakeholder factors", e= "engagement/relationship factors", f= "management process/action factors".

Note: "1=Olander and Landin, 2005", "2=Storvang and Clarke, 2014", "3=Olander and Landin, 2008", "4=Mahato and Ogunlana, 2011", "5=El-Sawalhi and Hammad, 2015", "6=El-Gohary et al., 2006", "7=Ng et al., 2014", "8=Leung et al., 2013b", "9=Manowong and Ogunlana, 2006", "10=Graham, 2010", "11=Close and Loosemore, 2014", "12=Muriithi and Crawford, 2003", "13=Smyth et al., 2010", "14=De Schepper et al., 2014", "15=Boudet and Ortolano, 2010", "16=Ng et al., 2012", "17=Yitmen, 2015", "18=Cleland, 1988", "19=Yang and Shen, 2015", "20=Yu and Leung, 2015", "21=Jepsen and Eskerod, 2009", "22=Maylor, 2001", "23=Loosemore, 2006", "24=Yang et al., 2009b", "25=Olander, 2007", "26=Bourne and Walker, 2006", "27=Aaltonen and Sivonen, 2009", "28=Ivory, 2004", "29= Yang et al., 2011a", "30=Laroche, 2003", "31=Mills et al., 2006", "32=Barrett and Stanley, 1999", "33=Mahato and Ogunlana, 2006", "34=Morris, 1983", "35=Dia, 1991", "36=Smyth, 2008", "37=Aaltonen, 2011", "38=Li et al., 2012b", "39=Rowlinson and Cheung, 2008", "40=Xie et al., 2014", "41=Shan and Yai, 2011", "42=Tam et al., 2009", "43=Mathur et al., 2008", "44=Dooms, 2010", "45=De Dreu, 2006", "46=Aaltonen et al., 2008", "47=Thomson et al., 2003", "48=Buertey et al., 2016", "49=Yang et al., 2018"

Boudet and Ortolano (2010) found out that the stakeholders will mobilise efforts against development where there are perceived high level of project risks, political opportunity to take

collective action, appropriation of existing social structures and availability of resources, and loss of trust between the decision makers and stakeholders. Additionally, Storvang and Clarke (2014) argued that stakeholder involvement in complex construction projects must strive to overcome problems such as stakeholder opposition, stakeholders who lack ideas of what they actually want, and the necessity of finding alternative project solutions for uncertain circumstances. Other scholars have identified problems of construction SM such as multiplicity of stakeholders, insufficient engagement of stakeholders, PMs having limited knowledge and working with unclear objectives of SM, invisibility of stakeholders in the project environment, and ineffective communication with the multi-stakeholders (Bourne and Walker, 2006; Loosemore, 2006; Rowlinson and Cheung, 2008).

Consequently, mismanaging the expectations of the stakeholders in projects could result in dissatisfaction of stakeholders, poor future relationships, lack of stakeholder support, project delays, conflicts and disagreements, and the eventual failure of project (Takim, 2009).

5.4 STAKEHOLDER MANAGEMENT SUCCESS FACTORS

Scholarly works like Yang et al. (2009b) adopted the important considerations affecting SM as mechanisms to enhance the success of the SM process in projects. CSFs have been described to be the "areas, in which results, if they are satisfactory, will ensure successful competitive performance for the organisation" (Rockart, 1979). Likewise, Saraph et al. (1989) described CSFs as "those critical areas of managerial planning and action that must be practised in order to achieve effectiveness". Furthermore, it is required for the PMs to realise whether the ESGs are being managed effectively and efficiently in project (Cleland and Ireland, 2002). This research defines CSFs as "*the management activities, practices and functions that must be put in place to ensure*

high performing SM process" (Oppong et al., 2017, p. 1042). Accordingly, the identified SFs for managing ESGs in projects are discussed in the sub-sections following.

5.4.1 Managing the External Stakeholders with Social Responsibilities

Corresponding to the normative stakeholder theory, it is essential for the PMs to be mindful of the valid and legitimate stakeholder interests, and further do well to fulfil the moral obligation towards stakeholders within a collectively supportive system (Carroll, 1991; Donaldson and Preston, 1995). The social responsibilities are in the form of legal, economic, ethical, environmental, and cultural responsibilities that the project owns its stakeholders (Donaldson and Preston, 1995; El-Sawalhi and Hammad, 2015; Yang and Shen, 2015). Yang and Shen (2015) consider these responsibilities as the precondition for effective SM that could lead to SS and project success.

5.4.2 Allocating Sufficient Resources to Manage Stakeholder

SM is a very important and involving duty that requires huge resources to carry out. Especially for mega projects, the developers have to conduct a series of engagement activities until balance and equity are reached among the stakeholders. The resource investments directly relate to the count of stakeholders and the extent of SM process carried out. What is more, the resource dependency theory requires that the PMs use the greatest power and resource available to gain other necessary resources from the stakeholders (who are holders or contributors of resources) to undertake projects successfully (Pfeffer and Salancik, 1978; Jepsen and Eskerod, 2009). Therefore, the PMs have to obtain the needed resources from project and stakeholders, and then commit to the management process to ensure successful project delivery (El-Sawalhi and Hammad, 2015).

5.4.3 Clearly Defining Project Mission and Objectives

The PMs have the responsibility to define the project mission and the objectives of the SM process early in project. The mission and objectives enable the PMs to appropriately consider the concerns and expectations of stakeholders throughout the project duration (Karlsen, 2002; Yang et al., 2009b). The PMs should consider information such as stakeholder interests, needs, commitment, and constraints of projects while formulating the objectives. The effectiveness of the SM process should be regularly evaluated so that a decision could be reached on maintaining, revising, or improving the current objectives (Yang and Shen, 2015).

5.4.4 Identifying Stakeholders Properly

For effective SM, the PMs should readily know who the stakeholders are and classify them properly (Frooman, 1999; Yang and Shen, 2015). The stakeholders must not only be the obvious ones but also those who are less relevant in the present time (Cleland, 1988; Cleland, 1999; Jergeas et al., 2000; Oyegoke, 2010; Henjewele et al., 2013). The stakeholders should be identified on the basis of people and entities who can "affect/be affected by" and/or "have a form of stake in" project delivery (Freeman, 1984; Olander, 2007). The PMs should review the historic interphases with the PSE, and also consider "strategic issues" faced presently or in the past (Freeman, 1984; Olander, 2007; Cleland, 1988; King, 1981).

5.4.5 Collecting Adequate Information about Stakeholders

Cleland (1988) recommends that a formalised stakeholder information gathering process should consider the specific information required; the origin and how to get it; who is to gather, analyse, interpret and report it; distribution platforms and who can have access; who can use it; and how it should be protected from leakage or misuse. The stakeholder information includes their contacts,

interests, needs, commitments and constraints (Yang and Shen, 2015). The portion of stakeholder information that is sensitive should be handled with ethical care (Cleland, 1988).

5.4.6 Exploring Stakeholders' Needs and Constraints About Project

Upon gathering the stakeholder information, the PMs should take the next step of exploring into details of the interests, expectations and needs of the numerous stakeholders as well as the constraints they pose to project implementation (Freeman et al., 2007). Exploring such details is important "so that a satisfactory and realistic solution to the problem being addressed is obtained" (Smith and Love, 2004, p. 22). Evaluating the stakeholders this way has been proven to be very vital for effective SM (Olander and Landin, 2008).

5.4.7 Acquaintance with Project Indigenous Knowledge

Construction projects are usually carried out in institutionally demanding settings and therefore face broader socio-political environments (Morris and Hough, 1987). The influence of the local socio-political environment on projects may vary from one community to the other. The diverse local settings of construction projects offer varying challenges to the PMs who must manage the expectations and concerns of the stakeholders. By implication, successful SM requires the PMs to get acquainted with the local knowledge/settings which could have unique influence in the PSE (Aaltonen and Kujala, 2010).

5.4.8 Assessing the Attributes of Stakeholders

The readiness and capacity of stakeholders to endanger or collaborate with project development should be carefully appraised (Yang et al., 2009b; Savage et al., 1991). This capacity is dependent on the attributes of the stakeholders, viz; urgency, power, legitimacy and proximity (Mitchell et al., 1997; Bourne, 2005). Bourne and Walker (2005) consider proximity to be the nearness of

multi-stakeholders to the driving force of project. Thus, the stakeholders with high power and influence could appear shadowy or invisible based on the distance from the driving force of project.

5.4.9 Assessing Stakeholders' Behaviours

The stakeholders exhibit diverse behaviours aimed at getting their claims met in project. Freeman et al. (2007) stated that the PMs ought to understand these behaviours in the clearest manner. The behaviours of stakeholders are described as either observed behaviour, competitive threat, cooperative potential, and opposite position; or their level of supportiveness and receptiveness of project (Freeman, 1984; Yang and Shen, 2015). The stakeholders use strategies including direct withholding and direct actions to shape their saliency in projects (Aaltonen et al., 2008).

5.4.10 Analysing Conflicts and Coalitions among Stakeholders

The PMs usually classify the stakeholders into groups based on the similar and different backgrounds, interests, and expectations about projects. Stakeholders with similar and dissimilar interests and expectations are likely to form coalitions and conflicts respectively (Freeman, 1984; Frooman, 1999). Freeman's (1984) strategy model requires that the PMs recognize the potential conflicts and coalitions among the interests and expectations of the multi-stakeholders. Effective stakeholder conflict and coalition analysis is important and contribute greatly to successful SM (Freeman, 1984).

5.4.11 Understanding the Areas of Stakeholders' Interests

According to Karlsen (2002), an important consideration for assessing stakeholders is their specific areas of project interests. Stakeholders may have different interests in projects including social, environmental, economic, political, cultural, physical, information, ethical, legal, and technical interests (Cleland, 1999; Ng et al., 2013; Leung et al., 2013b; Zhang and El-Gohary, 2016).

Understanding the areas of stakeholder interests is regarded as an important duty of the PMs (Freeman et al., 2007).

5.4.12 Predicting the Influence of Stakeholders Accurately

Stakeholders devise tactics and strategies to influence project decisions in a way that satisfy their expectations. These strategies could be very crude such as scheming on the media, vandalism, public street matches, and community picketing (Moore and Warren, 2006; Teo and Loosemore, 2012). PMs should anticipate the stakeholder influence in order to "plan and execute a sufficiently rigorous stakeholder management process" (Olander, 2007, p. 278). The analytical tools to predict stakeholder influence on projects include stakeholder impact index, power/predictability matrix, stakeholder influence matrix, and power/interest matrix (Olander, 2007; Young, 2006; Newcombe, 2003).

5.4.13 Determining the Strengths and Weaknesses of Stakeholders

Cleland (1988) stated that evaluating the weaknesses and strengths of stakeholders is a precondition to understand their potential strategies. The weaknesses include lack of political will, poor stakeholder organisation, incoherent and ineffective strategies, and non-commitment of members, whiles the strengths include availability of needed resources, association with political figures, support of the public, workable strategies and determination of stakeholders (Cleland, 1988).

5.4.14 In-depth and Transparent Analysis of all Alternative Project Solutions

According to Ng et al. (2014), PMs must produce all feasible project solutions so that the stakeholders can draw the costs-benefits comparisons of the proposed development. Disputes may emerge where the stakeholders realise that better development options have been overlooked for

the more destructive option (Olander and Landin, 2005). Otherwise, the stakeholders will cooperate if the proposed development is the best feasible option.

5.4.15 Compromising Stakeholder Conflicts through Consensus Building

The differences in the stakeholder background imply that they will pursue different project interests. Mutual decision-making can only be effective if the conflicts are compromised until a balance is reached among the stakeholder interests and expectations (Freeman, 1984). The conflicts are compromised through consensus building processes that give considerable attention to each stakeholder so that mutual satisfaction could be optimized (Leung et al., 2005).

5.4.16 Involvement of Stakeholders in Decision Making

It is expedient to engage stakeholders in project process to ensure effective information exchange among stakeholders (Yang and Shen, 2015; El-Sawalhi and Hammad, 2015). Stakeholder engagement could stretch from merely informing stakeholders about project decisions to fully empowering them to form part of the project decision-making body. The intermediate levels could be consulting, involving or collaborating with stakeholders in project implementation (Larson and Williams, 2009). Hence, the PMs should engage the stakeholders appropriately for project success.

5.4.17 Formulating Appropriate Strategies to Handle Stakeholders

The PMs devise strategies to counteract or align stakeholders' expectations with the project mission, depending on whether the stakes are adversarial or supportive. However, the chosen strategy should be perceived as an attitude by which the PMs handle stakeholders (Karlsen, 2002). Therefore, policies that require vigorous SM are central for implementing the devised strategies (Cleland, 1988). Over time, proactive SM will become attitudinal and lessen the unpreparedness

of PMs towards the adverse actions of stakeholders. The contextual response strategies of PMs include adaptation, compromising and influence strategies (Aaltonen and Sivonen, 2009).

5.4.18 Predicting Stakeholders' Reactions for Implementing the Strategies

PMs must anticipate the nature of stakeholders' reactions when the strategies are implemented on them (Freeman et al., 2007). The forecast of the PMs should be about the feasibility and acceptability of the devised strategies on stakeholders (Dias, 1999). Predicting the possible reactions of stakeholders informs the PMs in advance on the effectiveness of the strategies (Cleland and Ireland, 2002).

5.4.19 Implementing the Formulated Strategies on Stakeholders

The devised strategies are supposed to be implemented in a way that facilitate the project to move forward smoothly and promptly. If the strategies are well-implemented, adversarial stakeholders could be transformed into supportive stakeholders for the benefit of the project (Cleland, 1988).

5.4.20 Continuous Evaluation of Stakeholders' Satisfaction with Strategies

The implemented strategies and corresponding results ought to be evaluated regularly to confirm if they are functioning well (Karlsen, 2002; Yang and Shen, 2015). In addition, benchmarks could be established to monitor if the SM strategies implemented are producing good results. The outcomes of the regular evaluation process will subsequently help the PMs to realise the areas that require improvement to reach the expected level.

5.4.21 Effective Communication with Stakeholders

Effective two-way communication process is vital for successful SM and project delivery (Senaratne and Ruwanpura, 2016). Clear and formal two-way communication systems ensure adequate information flow between the PMs and stakeholders (Takim, 2009). Moreover, the costs

and benefits associated with project development should be effectively communicated to the stakeholders to enhance the chances of stakeholders supporting project purpose and optimizing SS (Ng et al., 2014; Olander and Landin, 2008).

5.4.22 Promoting and Sustaining Good Relationship with Stakeholders

Successful relationship management is central to the realization of stakeholder expectations in project development (Jergeas et al., 2000; Savage et al., 1991). Effective stakeholder and relationship management result in project performance and client satisfaction and accrues long-term benefits to all project participants (Rowlinson and Cheung, 2008). Trust and commitment are enhanced by effectively managing stakeholder relationships (Karlsen et al., 2008).

5.4.23 Ensuring Mutual Trust and Respect with and Among Stakeholders

Good relationships are always underpinned by trust and respect among stakeholders (Senaratne and Ruwanpura, 2016; El-Sawalhi and Hammad, 2015). Trust is a significant ingredient for the successful management of inter-organisational interfaces through ensuring openness and effective communication in projects (Shen et al., 2017). It is necessary to transform the mentality of stakeholders in a way that upholds and upgrades trust among the same in construction projects (Kapogiannis and Sherratt, 2018). Hence, shared trust and respect are essential ingredients for effective SM that enhances mutual SS.

5.4.24 Obtaining Support and Assistance from Higher Authorities

In the project course, the PMs are likely to face difficulties in dealing with powerful stakeholders and resolving excessive conflicts. Prudently, the PMs should obtain support from the higher management authorities to surmount objections and improve their capacity to implement project

decisions smoothly (Yang and Shen, 2015; Takim, 2009).The 25 SFs identified in literature are summarized in Table 5.3.

Table 5.3 Success factors of construction stakeholder management

S/N.	Critical success factors	Sources
1	[a]Managing the external stakeholders with social responsibilities	[1],[2],[3],[4],[5],[6],[7],[8],[9],[10],[11],[41], [42],[43],[44],[45],[47]
2	[a]Allocating sufficient resources to manage stakeholders	[10]
3	[b]Clearly defining project mission and objectives	[7],[8],[9],[10],[11],[12],[13],[14],[15],[16], [17],[41], [42],[43],[44],[45]
4	[b]Identifying stakeholders properly	[2],[4],[6],[7],[9],[10],[11],[12],[14],[16],[18], [19],[20],[21],[22],[23],[24],[25],[26],[27],[28], [29],[30], [31],[32],[41],[43],[44],[45],[46],[48]
5	[b]Collecting adequate information about stakeholders	[11],[18],[44]
6	[b]Exploring stakeholders' needs and constraints about project	[7],[9],[10],[11],[12],[17],[20],[27],[30],[31], [33],[34],[35],[41],[42],[43],[44],[47]
7	[b]Acquaintance with project indigenous knowledge	[10],[36],[42],[43]
8	[c]Assessing the attributes of stakeholders	[4],[6],[7],[9],[10],[11],[12],[20],[21],[22],[23], [24],[25],[27],[28],[31],[41],[42],[43],[45]
9	[c]Assessing stakeholders' behaviours	[7],[9],[10],[11],[12],[16],[19],[21],[27],[40],[41],[45]
10	[c]Analysing conflicts and coalitions among stakeholders	[4],[7],[8],[9],[10],[11],[12],[16],[17],[21],[22], [24],[25],[37],[41],[43],[45]
11	[c]Understanding the areas of stakeholders' interests	[7],[8],[9],[10],[11],[12],[20],[22],[23],[24], [27],[28], [29],[31],[34],[40],[41],[42],[43],[45]
12	[c]Predicting the influence of stakeholders accurately	[6],[7],[9],[10],[11],[12],[18],[24],[27],[29], [37],[41],[45]
13	[c]Determining the strengths and weaknesses of stakeholders	[18]
14	[d]In-depth and transparent analysis of all alternative project solutions	[10],[17],[33],[35],[43]
15	[d]Compromising stakeholder conflicts through consensus building	[4],[7],[9],[10],[11],[12],[15],[16],[8],[22],[24], [31],[32],[41],[42],[43],[45]
16	[d]Involvement of stakeholders in decision making	[10],[11],[42],[43],[44],[45],[46],[47],[48]
17	[d]Formulating appropriate strategies to handle stakeholders	[1],[4],[7],[8],[9],[10],[11],[12],[13], [14],[16], [18],[19],[21],[25],[28],[35],[41],[42],[43],[45]
18	[d]Predicting stakeholders' reactions for implementing the strategies	[7],[9],[10],[11],[14],[16],[18],[41],[43],[45]
19	[e]Implementing the formulated strategies on stakeholders	[10],[11],[43]
20	[e]Continuous evaluation of stakeholders' satisfaction with strategies	[10],[11],[43]
21	[f]Effective communication with stakeholders	[4],[5],[6],[7],[8],[17],[9],[10],[11], [14],[15], [22],[24],[25],[26],[27],[31],[32],[33],[35],[36], [38],[39], [41],[42],[43],[44],[45],[46],[47],[48]
22	[f]Promoting and sustaining good relationship with stakeholders	[1],[6],[7],[8],[9],[10],[11],[12],[24],[25],[26], [31],[35],[40],[41],[42],[43],[44],[45],[48]
23	[f]Ensuring mutual trust and respect with and among stakeholders	[10],[32],[43],[48]
24	[f]Obtaining support and assistance from higher authorities	[10],[11],[44],[46]
25	[f]Analysing the changes in stakeholder environment	[4],[7],[9],[10],[11],[14],[23],[25],[27],[31], [34],[41],[42],[43],[44],[45],[47]

Note: a= "management support SFs", b= "information input SFs", c= "stakeholder assessment SFs", d= "decision making SFs", e= "action and evaluation SFs", and f= "sustainable support SFs".

Note: "1=Svendsen, 1998", "2=Winch, 2002", "3=Phillips, 2003", "4=Bourne, 2005", "5=El-Gohary et al., 2006", "6=Walker et al., 2008", "7=Yang et al., 2009b", "8=Takim, 2009", "9=Yang et al., 2011a", "10=El-Sawalhi and Hammad, 2015", "11=Yang and Shen, 2015", "12=Cleland, 1999", "13=Jergeas et al., 2000", "14=Karlsen, 2002", "15=Leung et al., 2004a", "16=Freeman et al., 2007", "17=Ng et al., 2014", "18=Cleland, 1988", "19=Savage et al., 1991", "20=Mitchell et al., 1997", "21=Frooman, 1999", "22=Friedman and Miles, 2002", "23=Elias et al., 2002",

"24=Olander, 2006", "25=Bourne and Walker, 2006", "26=Cova and Salle, 2006", "27=Young, 2006", "28=Jepsen and Eskerod, 2009", "29=Nguyen et al., 2009", "30=Heravi et al., 2015", "31=Yu and Shen, 2015", "32=Senaratne and Ruwanpura, 2016", "33=Olander and Landin, 2005", "34=Loosemore, 2006", "35=Olander and Landin, 2008", "36= Aaltonen and Kujala, 2010", "37=Rowley, 1997", "38=Landin, 2000", "39=Bakens et al., 2005", "40=Aaltonen et al., 2008", "41=Yang et al., 2010", "42=Nwachukwu et al., 2017", "43=Park et al., 2017", "44=Huemann et al., 2016", "45=Molwus et al., 2017", "46=Buertey et al., 2016", "47=Mok et al., 2017", "48=Yang et al., 2018"

5.4.25 Analysing the Changes in Stakeholder Environment

It has been established that the PSE of construction is dynamic and not static (Yang et al., 2009b; Yang and Shen, 2015; Henjewele et al., 2013). Stakeholder information, interests and influences constantly change based on the strategic issues the project is fronting (Freeman, 1984). The PSE dynamics may be partly caused by the complexities and uncertainties of construction projects. The uncertainties include knowing who the necessary stakeholders are, their influences and expectations, and the implications of their relationships in project (Ward and Chapman, 2008). The dynamics could be recognized by juxtaposing the SM activities and methods with historical records (Karlsen, 2002; Yang and Shen, 2015).

5.5 PERFORMANCE INDICATORS OF STAKEHOLDER MANAGEMENT

KPIs enable the assessment of organisational effectiveness and performance of projects in the industry. The developed KPIs would help to practically benchmark performance in organisations that desire improvement (The KPI Working Group, 2000). In fact, leaders in organisations use the effects of SM as gauges for monitoring and assessing the performance of management teams (El-Sawalhi and Hammad, 2015). The 22 PIs adopted in the study are discussed in the sub-sections following (Table 5.4).

5.5.1 Stakeholder Empowerment

According to Zimmerman (1984), empowerment is "a multi-dimensional social process that helps people gain control over their own lives. It is a process that fosters power (that is, the capacity to

implement) in people, for use in their own lives, their communities, and in their society, by acting on issues that they define as important". Empowerment results from effectual relationship management that translates stakeholder expectations into real outputs, and boosts power and influence of stakeholders in project development (Rowlinson and Cheung, 2008).

5.5.2 Management Monitoring and Response

Stakeholder engagement ensures the effective monitoring and consideration of the stakeholder expectations and requirements in projects (Bal et al., 2013; Wang, 2001). This aids project management teams to be timeous in responding with solutions that accrue mutual SS in line with project goals (Woltjer, 2009).

Table 5.4 Performance indicators of construction stakeholder management

No.	Performance indicators	Sources
1	Stakeholder empowerment	[1]
2	Management monitoring and response	[2],[3],[4],[22],[25]
3	Stakeholder relational benefits	[5],[6]
4	Better service delivery	[7],[8],[22],[26],[28]
5	Stakeholder rights protection	[9]
6	Innovation enhancement	[10]
7	Mutual learning	[10],[11],[12],[21],[22],[23],[24],[25]
8	Public image creation	[4],[10],[21]
9	Stakeholder capital building	[10],[12],[26]
10	Smooth project facilitation	[6],[7],[8],[13],[14],[22],[23],[26],[28]
11	Sustainable lifecycle performance	[12],[14],[21],[26]
12	Enhanced organisational motivation	[7],[8]
13	Uncertainty and risk mitigation	[4],[15],[28]
14	Conflict mitigation	[10]
15	Improved organisational foresight	[7],[8]
16	Stakeholder support of project	[14],[15],[21],[22],[23]
17	Trust and respect in relationship	[4],[13],[22],[24],[26],[27],[28]
18	Implementing collective agreements	[10],[16],[22],[25],[26]
19	Partnerships and collaborations	[4],[10],[22],[24]
20	Cost savings	[7],[8],[17],[26]
21	Potential for marketplace success	[4],[7],[8],[18],[22]
22	Communication effectiveness	[19],[20],[21],[22],[23],[24],[28]

Notes: "1=Rowlinson and Cheung, 2008", "2=Wang, 2001", "3=Woltjer, 2009", "4=Bal et al., 2013", "5=Clarkson, 1995", "6=Smith and Love, 2004", "7=Wheeler and Sillanpää, 1997", "8=Carroll and Buchholtz, 2006", "9=Plummer and Taylor, 2004", "10=Innes and Booher, 1999", "11=Manawong and Ogunlana, 2008", "12=Varol et al., 2011", "13=Mahato and Ogunlana, 2011", "14=Olander and Landin, 2008", "15=Manowong and Ogunlana, 2006", "16=Enserink and Koppenjan, 2007", "17=Orr and Scott, 2008", "18=Mellahi and Wood, 2003", "19=Ahmed and Kangari, 1995", "20=Rashvand and Majid, 2014", "21=Huemann et al., 2016", "22=Buertey et al., 2016", "23=Liu et al., 2018b", "24=Kpamma et al., 2018", "25=Leung and Olomolaiye, 2010", "26=Yu and Leung, 2018", "27=Strahorn et al., 2017", "28=Kapogiannis and Sherratt, 2018"

5.5.3 Stakeholder Relational Benefits

Effective engagement and management of stakeholder needs and relationships enhance the commitment and relational wealth of stakeholders (Smith and Love, 2004). Besides, the continuous success of organisations and their activities is subject to the management of stakeholder expectations to generate wealth, satisfaction and value for the stakeholders (Clarkson, 1995).

5.5.4 Better Service Delivery

Stakeholders are managed by incorporating their needs and expectations into project development. In effect, the stakeholders can access improved services corresponding to their project requirements (Carroll and Buchholtz, 2006). The evaluated service improvement extent can manifest how well stakeholder expectations and requirements are managed in project development.

5.5.5 Stakeholder Rights Protection

Effective SM helps to protect the rights of people and minorities in project (Plummer and Taylor, 2004). Interested and affected stakeholders should have equal opportunities to contribute opinions and requirements to project decisions fairly and freely (Manowong and Ogunlana, 2006).

5.5.6 Innovation Enhancement

Social learning is "the process of framing issues, analysing alternatives, and debating choices in the context of inclusive public deliberation" (Daniels and Walker, 1996, p. 73). The appropriate incorporation of stakeholder opinions and ideas into project development through effective consensus building results in improvement of innovative project strategies and solutions (Innes and Booher, 1999). Hence, more innovative solutions and strategies for built environment problems can be generated by including the "collective wisdom" of stakeholders.

5.5.7 Mutual Learning

SM performance is indicated by the extent to which organisational learning extends to the project communities (Innes and Booher, 1999; Manawong and Ogunlana, 2008). Engagement exercises guarantee that new opinions and ideas emerge in project development and expands into the entire stakeholder communities through learning process. Consensus building process leads to practical changes such as positive change in peoples' perception about project (Innes and Booher, 1999).

5.5.8 Public Image Creation

Effective stakeholder engagement leads to the creation of first-class image of project in the local communities and among public stakeholders (Bal et al., 2013). Good public image about a project manifests the level of pride and repute of the organisation (Yeung, 2007). Although media coverage of projects is challenging to appraise, it is important to ensure open, trustworthy and effective communication with the media and multi-stakeholders (Olander and Landin, 2008).

5.5.9 Stakeholder Capital Building

Collaborative approach of SM builds social capital by means of trustworthy relationships (Innes and Booher, 1999). The resultant social relationship networks are continuously kept by trust and feedback-oriented communication (Bresnen et al., 2005). Additionally, intellectual capital is developed through mutual comprehension, shared problems, and agreement on information (Innes and Booher, 1999). Ideas from all stakeholders are conjoined through mutual understanding to enhance intellectual inputs in projects. Moreover, political capital is built across different stakeholders (with diverse power in projects) working together to achieve objectives (Innes and Booher, 1999).

5.5.10 Smooth Project Facilitation

SM performance is indicated by the smoothness of project development process (Mahato and Ogunlana, 2011). Projects that face challenges with stakeholders are often interrupted and affected negatively (Olander and Landin, 2008). The stakeholders may use formal and informal approaches such as petitions, protests, picketing or vandalism to interrupt projects as a means to get their requests met (Olander and Landin, 2008). Hence, effectual SM leads to process efficiency i.e. diminution of time, effort and resource inefficiency in projects (Smith and Love, 2004).

5.5.11 Sustainable Lifecycle Performance

SM process that allows for the participation of diverse stakeholders generates developmental solutions that are sustainable in the long run (Varol et al., 2011). Thus, the project becomes more viable and beneficial to the stakeholders. SM is expected to minimize potential long-term undesired impacts of project on multi-stakeholders e.g. ecological problems (Olander and Landin, 2008).

5.5.12 Enhanced Organisational Motivation

Organisations have the impetus to undertake projects particularly where stakeholder support is attained (Wheeler and Sillanpää, 1997). SM helps PMs to concentrate on implementing the requirements where stakeholder views are incorporated in project, and minimal disruptions are anticipated or actually experienced. The organisational motivation extent shows how well the SM process performs.

5.5.13 Uncertainty and Risk Mitigation

Paying adequate heed to stakeholders in project development helps to explore and alleviate risks and threats founded on uncertainty (Bal et a., 2013). As claimed by Ward and Chapman (2008, p.

563), "stakeholder-related uncertainty encompasses who the relevant stakeholders are, how they can influence a project at different stages of the project life cycle (PLC), what their project-related motives are, and the implications of relationships between different stakeholders". Aside, opportunity losses resulting from stakeholder opposition and disturbances on projects will be curtailed (Manowong and Ogunlana, 2006). Hence, the mitigation extent of uncertainties and risks serves as an indication of SM performance.

5.5.14 Conflict Mitigation

The diverse opinions of stakeholders result in conflicting requirements which are to be properly managed in project development. Conflicts are manifested in the extent and number of disagreements and disputes. Compromising stakeholder conflicts is vital for successful SM in construction projects (Yang et al., 2010). Hence, alleviating unhelpful conflicts of interests through effectual consensus building reveals the performance of SM process (Innes and Booher, 1999).

5.5.15 Improved Organisational Foresight

Efficacious SM ensures that uncertainties and conflicts within the PSE are greatly alleviated (Bal et al., 2013). Subsequently, organisations become proactive and accurately forecast impending issues that can disrupt or benefit project development (Carroll and Buchholtz, 2006). More accurate decisions would therefore be made in project development.

5.5.16 Stakeholder Support of Project

By successfully integrating stakeholder requirements into plans, the stakeholders are likely to accept and buy into project development (Olander and Landin, 2008). Optimistic attitude towards stakeholder engagement underlies successful project management that results in stakeholder

acceptance of project (Manowong and Ogunalana, 2006). Therefore, the level of project acceptance and support is indicative of SM performance.

5.5.17 Trust and Respect in Relationship

Effectual SM boosts mutual trust and respect in stakeholder relationships (Mahato and Ogunlana, 2011). Besides, engaging the stakeholders properly produces useful and trustworthy relationships with and among them (Bal et al., 2013). Further, balanced risk apportionment among stakeholders helps to develop and sustain trustworthy relationships in construction projects, and vice versa (Strahorn et al., 2017). Therefore, the level of trust and respect in relationships gives a clue of how well stakeholders are managed in projects.

5.5.18 Implementing Collective Agreements

High quality joint agreements emerge from improved cooperation and collective actions of project stakeholders (Innes and Booher, 1999). Aside, the decisions reached can be implemented with ease and result in collaborative project governance (Enserink and Koppenjan, 2007; Innes and Booher, 1999). In effect, the number of project decisions jointly agreed with stakeholders informs how well SM is performing.

5.5.19 Partnerships and Collaborations

Over lasting duration, good stakeholder relationship management could generate spin-off collaborations and partnerships (Bal et al., 2013; Innes and Booher, 1999). This is ideal particularly where projects are undertaken in phases over long duration. The extent of partnerships and collaborations reveals the bond generated among project stakeholders through SM.

5.5.20 Cost Savings

Expectedly, SM reduces direct operational costs associated with stakeholder exceptions in projects (Orr and Scott, 2008). Once multi-stakeholders are involved and properly managed in projects, the extra cost required to deal with excepted stakeholders is minimized. Moreover, there will be savings on the insurance premiums and transaction costs associated with project endeavours. This can be explained by the alleviation of uncertainties, risks, conflicts, litigations and stakeholder actions that are costly for project (Carroll and Buchholtz, 2006; Wheeler and Sillanpää, 1997).

5.5.21 Potential for Marketplace Success

Stakeholders possess rich and significant volumes of local project information (Bal et al., 2013). SM amplifies the understanding of management teams and potential of marketplace success, and eventually leads to strategic positioning of the project organisation as an economic venture (Mellahi and Wood, 2003). Project organisations have easier access to financial support and are able to better identify new business opportunities (Carroll and Buchholtz, 2006; Wheeler and Sillanpää, 1997).

5.5.22 Communication Effectiveness

The extent or frequency of communication, i.e. exchange of information among project stakeholders, indicates how well SM is performing. Ahmed and Kangari (1995) identified communication skills as a client-satisfaction measure in the construction industry. Communication is recognized as a key measure of SS because it enhances relationships and influences attitudes in the PSE (Rashvand and Majid, 2014). In a good PSE, the various parties do not withhold sensitive and important information from one another but make available for mutual use and benefit.

The conceptual framework presented in Figure 5.1 shows the SM performance assessment measures. The resultant mutual SS from effective SM is measurable by the 22 PIs. This reveals the degree to which stakeholder expectations and requirements are managed in project. The potential measurement systems are shown in Table 5.5 against each PI.

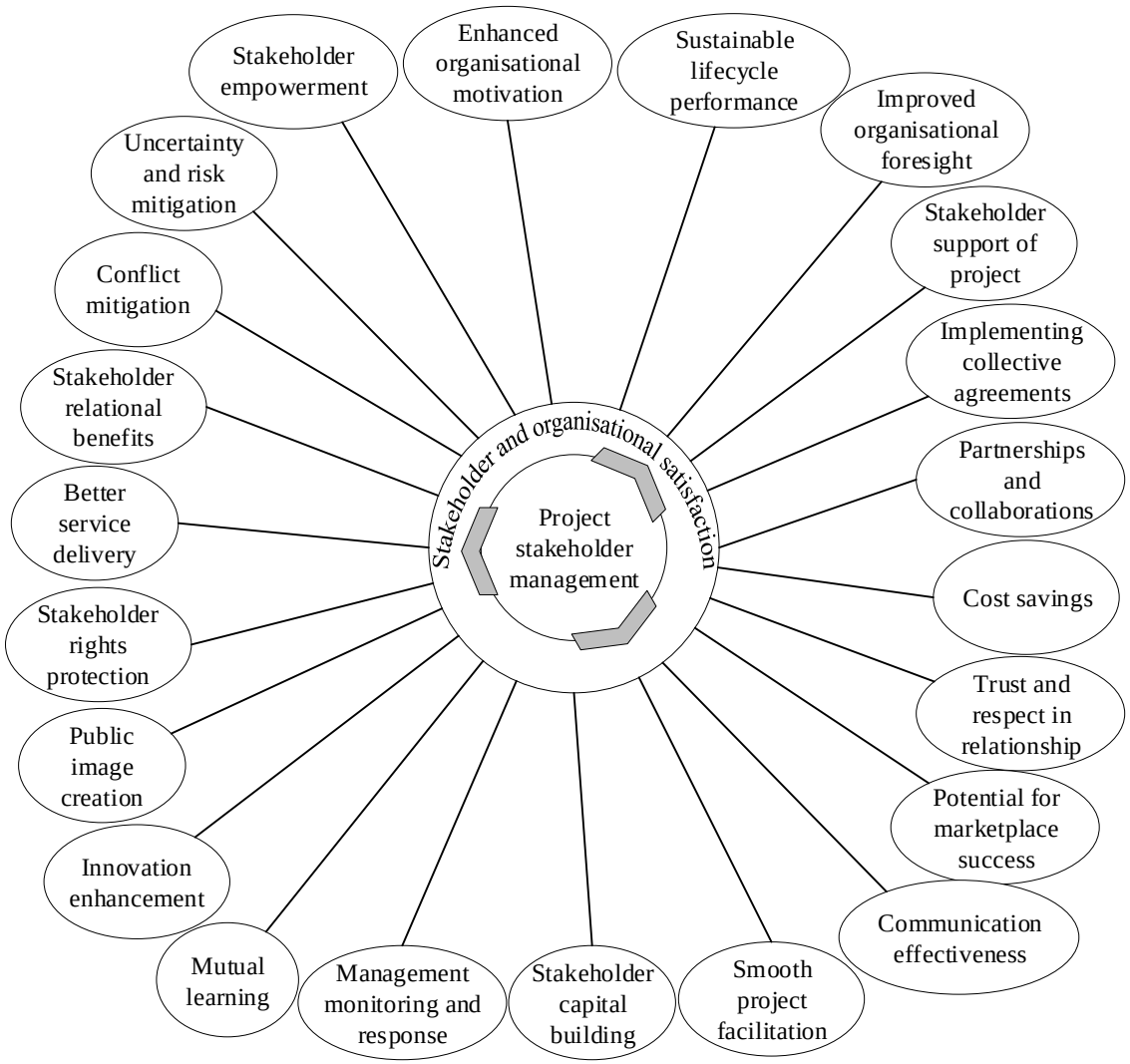

Figure 5.1 Framework of performance measures for construction SM

Adapted from Oppong et al. (2017)

Table 5.5 Performance assessment system for stakeholder management

Performance indicators	**Criteria**	**Measurement tool/indicators**	**Method of evaluation/ scale of outcome (1 to 3, where 3=high) [for ASTSWMO, 2011]**
Stakeholder empowerment		DIC (2008) 1. Majority of difficult significant issues identified and addressed before they impact on confidence Rowlinson and Cheung (2008) 2. Observing the nature and extent of empowerment perception among stakeholders. Chan and Chan (2004) 3. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 4. People begin to have a say in and to influence local developmental projects 5. Increasing ability of stakeholders to propose and undertake actions 6. Numbers of local leaders assuming positions of responsibility 7. Numbers of local people who acquire positions in formal organisations 8. Emergence of people willing to take on leadership	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Management monitoring and response	ASTSWMO (2011) 1. Comprehensive stakeholder assessment completed 2. Assessment results analysed and categorized 3. Strategic stakeholder involvement plan developed and implemented 4. Changing/emerging interests and concerns identified and plan modified, as needed	ASTSWMO (2011) 1. Key stakeholders identified and interviewed 2. Analysis completed to identify and categorize interests and concerns 3. Methods and approaches in strategic stakeholder involvement plan reflect stakeholder needs, as identified in interviews 4. Plan contains methods for continually assessing stakeholder interests and flexibility for changes, as needed SKM (2012) 5. Initial time taken for acknowledgment of inquiry and/or complaint received by phone, email, post or from direct contact with Project 6. Time taken for comprehensive response to issues raised from when correspondence is received.	ASTSWMO (2011) 1. No stakeholder assessment done; no involvement/engagement with stakeholders 2. Minimum requirements met; limited interviews; standard methods and approaches; plan not tailored to specific stakeholder interests and needs; little flexibility to modify for emerging/changing situations 3. Maximum number of interviews to ensure identification of all interests; methods and approaches reflect specific needs

	SKM (2012) 5. Record of correspondence 6. Follow up on requests for information 7. Distribution of consultation summary 8. Accuracy of information 9. Distribution reach	7. Percentage of issues and information provided by community/stakeholders relating to the project recorded in the inquiries and complaints register 8. Outstanding actions report generated monthly 9. Percentage of issues raised to relevant project team member(s) that is reported 10. Consultation summary accurate reflection of correspondence 11. Distribution of community update (including correct project contact details) 12. Number of complaints relating to difficulty in understanding provided information	identified; plan is flexible to incorporate changes, as needed SKM (2012) 4. Issues raised recorded in the inquiries and complaints register 5. Review of any submissions 6. Submissions tracked 7. Quality checks on distribution of reports 8. Correspondence from community/stakeholders 9. Feedback form/survey included in all community updates
Stakeholder relational benefits		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 2. Numbers of direct project beneficiaries	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Better service delivery		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 2. Improved and more effective service delivery Warburton et al. (2007) 3. Costs saved by people taking more responsibility for service outcomes and making less demands	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Stakeholder rights protection		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 2. Percentages of different groups attending meetings (e.g. women, minority groups)	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied
Innovation enhancement		Yeung et al. (2008; 2009a; 2009b; 2012) 1. Number of innovative initiatives introduced for improvement e.g. new construction techniques, management strategies etc. 2. Innovation cost saving expressed as a percentage of proposed project cost	Yeung et al. (2009b; 2012) 10-point satisfaction Likert scale with grade points undefined

		3. Subjective Likert scale scoring by key stakeholders 4. Innovation time saving expressed as a percentage of proposed project time Zhao (2002) 5. Number of new initiatives for improvement	
Mutual learning	ASTSWMO (2011) 1. Stakeholders can clearly articulate other participants' positions 2. Stakeholders with diverse viewpoints engage in civil dialogue and debate on issues 3. Stakeholders are willing to engage in joint problem-solving, compromising to reach mutually acceptable solutions	ASTSWMO (2011) 1. Number and types of concessions/compromises made throughout the project 2. Documentation of routine contact among stakeholders 3. Meeting/engagement summaries indicating civil and productive dialogue among stakeholders Warburton et al. (2007) 4. Greater awareness and understanding of the issues 5. More confidence and willingness to get involved in future	ASTSWMO (2011) 1. Stakeholders defend individual positions; not willing to compromise, remain polarized; stakeholders don't talk to each other and/or routinely make negative/derogatory remarks 2. Stakeholders understand others' positions, but do not fully embrace the process; compromise is limited or one-sided; stakeholders are civil to one another, with occasional flare-ups 3. Stakeholders are willing to engage in joint problem solving to reach solutions beneficial to all; free flow of communication among participants, with positive and constructive exchange; improvements to process due to enhanced understanding and acceptance of opinions and interests among stakeholders
Public image creation		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Stakeholder capital building		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009)	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly

		2. Interaction and the building of contacts with other groups and organisations Warburton et al. (2007) 3. Increased equality of access to decision-making 4. Developed new contacts/given access to new networks	satisfied; 6 = satisfied; and 7 = very satisfied.
Smooth project facilitation	ASTSWMO (2011) 1. SM is realistically integrated into overall project planning and budgeting 2. Projects are completed on time and on budget, with SM integral to the decision-making process 3. SM leverages resources and result in general support for outcomes	ASTSWMO (2011) 1. Ratio of actual to projected costs of overall project 2. Percentage of deadlines met 3. Number of decisions readdressed due to lack of support DIC (2008) 4. Level of systemic 'poor' practice reported by stakeholders which are not being addressed	ASTSWMO (2011) 1. Public controversy and/or litigation results in extended time and/or additional cost to complete 2. Project implemented on schedule, on budget 3. Project implemented in less than anticipated time and/or at less cost due to leveraging resources with stakeholders resulting in general acceptance of solutions
Sustainable lifecycle performance		Chan and Chan (2004) 1. ISO14000 score 2. EIA score 3. Total number of complaints received caused by the environmental issues; measure how well stakeholders' environmental concerns have been managed	
Enhanced organisational motivation		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Uncertainty and risk mitigation		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.

Conflict mitigation		Yeung (2007) and Chan et al. (2001) 1. The comparative number and magnitude of disputes occurrence in project DIC (2008) 2. No significant conflicts exist with key stakeholders which are not being addressed	
Improved organisational foresight		DIC (2008) 1. Issues identified and strategies in place prior to their escalation Chan and Chan (2004) 2. Subjective Likert scale scoring by key stakeholders	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Stakeholder support of project	ASTSWMO (2011) 1. Stakeholder relationships are established at the issue-identification stage and routinely utilised throughout the project 2. Alternatives are jointly identified, discussed, and debated 3. Decisions reflect the goals and interests of all stakeholders	ASTSWMO (2011) 1. Number of project delays due to public protest/controversy 2. Documentation of regulatory approval 3. Documentation that jointly identified implementation goals are met; funding provided Chan and Chan (2004) 4. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 5. Growing solidarity and mutual support DIC (2008) 6. Percentage of specific practice suggestions made by key stakeholders that have been adopted in whole or part	ASTSWMO (2011) 1. Negative stakeholder response; decision is rejected due to public controversy 2. Responses mixed; project given low priority due to public controversy 3. Response from majority of stakeholders is positive; decisions are routinely implemented with general support Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Trust and respect in relationship		DIC (2008) 1. Appropriate and ongoing relationship with specified cultural/stakeholder groups Yeung et al. (2008; 2009a) 2. Frequency of meeting one's expectation about another stakeholder's behaviour and/or having confidence in another stakeholder	Yeung et al. (2009a) and Ibrahim et al. (2015b) 10-point satisfaction Likert scale with grade points undefined

		3. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 4. Take-up rates of project recommendations 5. Numbers of local people who are involved in different stages of the project Ibrahim et al. (2015a; 2015b) 6. Subjective Likert scale scoring by key stakeholders 7. Number of social/technical issues mentioned during project meetings with ESGs	
Implementing collective agreements	ASTSWMO (2011) 1. Stakeholder interests identified and integrated into issue identification; common interests identified 2. Stakeholder interests integrated into alternative solutions 3. Stakeholder interests result in changed actions, reprioritization, adjustments throughout the project	ASTSWMO (2011) 1. Number and types of stakeholder interests included in issue definition 2. Number and types of alternative solutions reflecting common interests 3. Number and types of changed actions, adjustments, and/or reprioritizations, based on stakeholder interests, throughout the project and integrated into final decisions Larson and Williams (2009) 4. Numbers of project level meetings and attendance levels 5. Interest to be involved in decision making at different stages	ASTSWMO (2011) 1. Interests neither sought nor identified; issue defined without input; no adjustments or reprioritizations based on stakeholder interests/concern 2. Interests of some stakeholders identified and integrated into issue definition; alternative solutions reflect some, but not all interests; few or only established process adjustments 3. All stakeholder interests identified and integrated into issue definition; alternative solutions reflect common interests of all stakeholders; process continually assessed and adjustments made throughout the project
Partnerships and collaborations		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 2. Representation in other government or political bodies with relation to the project	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Cost savings	ASTSWMO (2011)	ASTSWMO (2011)	ASTSWMO (2011)

	1. SM is adequately integrated into project planning and budgeting upfront 2. Organisations have realistic workloads to ensure facilitation of quality SM 3. Informational material production time and cost requirements are understood and planned for	1. Number of times inadequately planned SM activities result in project delays; documented feedback from stakeholders on value of participation 2. Number of projects in organisation's workloads 3. Amount of cost/time overruns due to unrealistic expectations of informational material production requirements DIC (2008) 4. Reduction in legal and reputation costs 5. Estimate of resources realised by effective SM Carroll and Buchholtz (2006); Wheeler and Sillanpää (1997) 6. Savings on transaction costs and insurance premiums	1. Ratio of actual to anticipated cost/process time greater than 10; stakeholders regret participating 2. Ratio of actual to anticipated cost/process time greater than 2; stakeholders ambivalent about participating 3. Ratio of actual to anticipated cost/process time = 1; stakeholders enthusiastic and see value in participating
Potential for marketplace success		Chan and Chan (2004) 1. Subjective Likert scale scoring by key stakeholders Larson and Williams (2009) 2. Project organisational growth at the community level	Chan and Chan (2004) 1 = very dissatisfied; 2 = dissatisfied; 3 = slightly dissatisfied; 4 = neither dissatisfied nor satisfied; 5 = slightly satisfied; 6 = satisfied; and 7 = very satisfied.
Communication effectiveness	ASTSWMO (2011) 1. Documents from all participants are readily available, clearly written, understood, and translated when necessary 2. Meetings are conducted in a manner and format conducive to open dialogue and free exchange of ideas and opinions 3. Innovative approaches are utilised to share ideas and reach mutually acceptable solutions to complex issues SKM (2012)	ASTSWMO (2011) 1. Routine evaluations to gather feedback from stakeholders on availability, clarity, and understandability of written materials 2. Routine evaluations to gather feedback from stakeholders on openness of meetings and ability to enter into discussion on various ideas and opinions 3. Types of approaches used; types of issues discussed; solutions identified; routine evaluation to gather feedback from participants on effectiveness of approach and satisfaction with identified solutions DIC (2008) 4. Organisation and ESG satisfaction with quality of two-way dialogue, especially among formal reference/advisory group members Zhao (2002) 5. Frequency and type of information or data exchange between stakeholders 6. Amount of information or data transferred between the stakeholders	ASTSWMO (2011) 1. Written materials are highly technical and available to only a minority of stakeholders; only large, required public meetings are conducted 2. Somewhat filtered information is provided at regular, but frequent intervals and only a key point in the process; public meetings and limited participation workgroups are convened 3. Written materials are clear, readily available, with flexible formats to meet needs of all stakeholders; multiple opportunities open to all for information exchange, to include meetings, workshops, issue-specific workgroups,

	4. Adherence to project organisation's media/information policy 5. Follow up on requests for information and actions/issues raised 6. Clarity, accuracy and timeliness of information released, and coverage generated by the releases 7. Demonstrated level of understanding of project by the local community and key stakeholders 8. Usage of organisation's website with respect to project	Yeung et al. (2008; 2009a; 2009b; 2012) 7. Subjective Likert scale scoring by key stakeholders 8. Difference between the number of correspondences with external stakeholders and the standard number of correspondences with external stakeholders annually 9. Number of correspondences with external stakeholders per month 10. Reduction of written communication with ESGs as compared to previous similar projects 11. Variation of the number of correspondences with ESGs per month against the number of correspondences in previous similar projects SKM (2012) 12. Percentage/number of times that media/information protocol is strictly followed 13. Percentage of timely responses to information, enquiries and complains 14. Percentage of positive feedback on provided information 15. Accuracy of project/organisation information quoted by media 16. Percentage of issues/complains details provided to project team member(s) 17. Number of visits to project/organisation's website Ibrahim et al. (2015a; 2015b) 18. Turnaround time for requests for information 19. Percentage of ESG attendance in regular meetings 20. Number of social/technical meetings involving ESGs being held per month 21. Subjective Likert scale scoring by key stakeholders	presentations, and additional innovative approaches SKM (2012) 4. Media/information monitoring 5. Quality of information provided 6. Records of briefing (including follow up actions) 7. Review of media articles quoting project/organisation 8. Community/SM system for tracking follow up actions 9. Monitoring visits to project/organisation's site and feedback received through the website Yeung et al. (2009a; 2009b; 2012) 10. 10-point satisfaction Likert scale with grade points undefined

Note: The Table was adapted and expanded from ASTSWMO (2011).

Note: Some of assessment systems were assigned to the best-fit performance indicators.

Note: Chan and Chan (2004) adapted the 7-point Likert scale assessment method from Alarcon and Ashley (1996) to suit their study. This study adopts from Chan and Chan (2004) to measure the subjective KPIs.

5.6 CONCEPTUAL MODEL OF EXTERNAL STAKEHOLDER MANAGEMENT

According to Toor and Ogunlana (2008), a typical project management performance system entails delineating performance goals initially; establishing performance improvement mechanisms through the application of CSFs; and finally, assessing the true performance with the KPIs. The conceptual model illustrates the relationships among the attributes of ESM (Figure 5.2). The adapted model indicates the input, process and output stages of ESM practice in construction projects (Oppong et al., 2017). At the input stage, the ESG expectations and project variables are introduced as the input factors in place of the "performance objectives" in the original model. The PMs and decision-makers must successfully merge the project variables such as cost, time, quality and scope with the expectations of the ESGs in an equitable and fair manner. In the bid to reach such mutual result, "it is important that the project's objectives mesh with its stakeholders, and that they continue to fit stakeholders' interests as the project evolves, conditions change and the interdependencies of key systems, stakeholders and their objectives change" (Morris, 1994, p. 221).

The process stage is made up of the obstacles and CSFs to manage the ESGs successfully in construction projects. The obstacles introduced in the model are seen as those issues obstructing the ESM process and hindering managerial efforts. The PMs must apply the enhancement strategies properly to recognize, analyse and manage the interests and relationships of the ESGs in construction projects. The CSFs are the strategies or processes required to translate the input factors into the satisfaction of stakeholders (Oppong et al., 2017). As such, the extent of the application of the CSFs in ESM will predict the resulting mutual satisfaction accruing to ESGs.

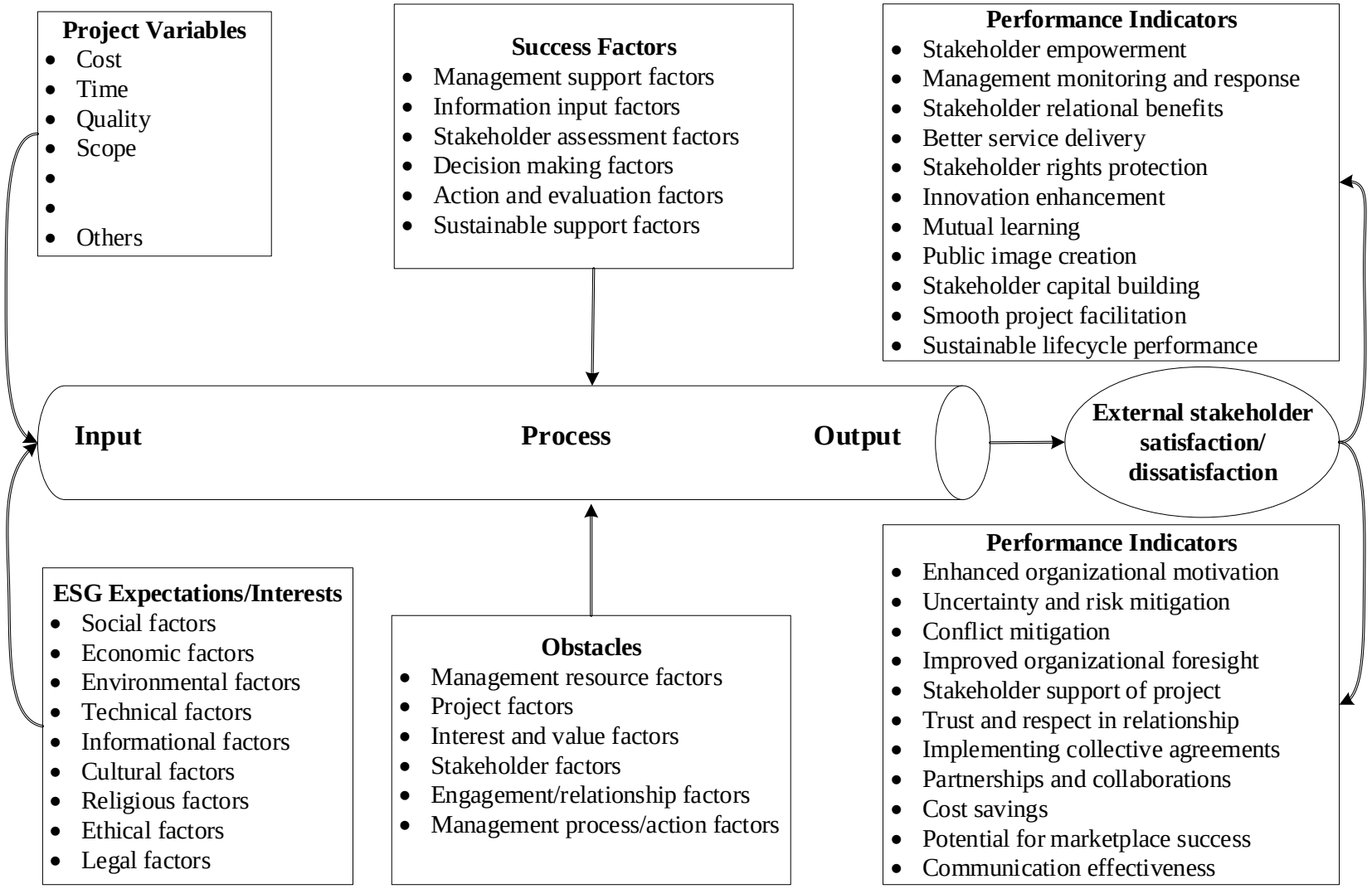

Figure 5.2 Conceptual model of external stakeholder management in projects

Adapted from Oppong et al. (2017)

Satisfaction in this case refers to the overall satisfaction or dissatisfaction of ESGs in project. Kärnä et al. (2009) stated that the "overall satisfaction is the customer's overall satisfaction or dissatisfaction with the organisation based on all encounters and experiences with that particular organisation. It is a question of the accumulation of satisfaction in the relationship" (p. 113). The expected mutual satisfaction level of ESGs (output stage) in project can be assessed by evaluating the KPIs. The level of mutual external SS is equivalent to the ESM performance level in project (Oppong et al., 2017). Hence, the ESM performance level could also be monitored, benchmarked and upgraded in construction project development. Generally, the conceptual model represents the key issues in PSE that are necessary to propose improvements in management approach.

5.7 CHAPTER SUMMARY

This chapter basically presented a comprehensive review of literature about the expectations of ESGs, and the obstacles, SFs and PIs of the ESM process in construction projects. A conceptual model emerged afterward to indicate the relationships among the sets of identified variables in construction projects. This chapter has provided a broad overview on what the ESGs expect from projects; the challenges faced by PMs in the PSE; the strategies required to enhance the SM process; and the indicators that will help to assess the performance level of the SM process. The literature constituted the foundation for the empirical aspect of the study. In Chapter 6, the findings from the interviews carried out on practicing experts are presented.

CHAPTER 6 INTERVIEW FINDINGS ON EXTERNAL STAKEHOLDER MANAGEMENT PRACTICES IN GHANA

6.0 INTRODUCTION

In the previous chapters, the theoretical foundation of the research was covered. This enabled gaps to be identified and the extant literature to be reviewed. In the present chapter, the semi-structured interviews conducted on CCs occupying management positions in the GCI are presented. Essentially, the comprehensive and holistic opinions of CCs who have experience in engaging, managing or relating with ESGs in both private and public sector projects are presented. The findings in this chapter contribute to the development of the substantive framework for ESM practice and performance improvement in the GCI (Chapter 9).

6.1 INTERVIEW PROCESS

The semi-structured interviews on experts were undertaken in tandem with other surveys (i.e. Delphi and ordinary surveys). As such, the interviews were conducted from April to July of 2017 in Ghana. Interviews facilitate comprehensive investigation of problems (Bennett, 1991), and generates valuable and insightful data with regards to the phenomenon in question (Marshall and Rossman, 2011). The interviews were necessary because SM has become a thoroughly discussed issue, and there is a need for a comprehensive and holistic insight into CCs' views to improve project performance in Ghana and other developing countries. The interviews covered major issues in the ESE such as the current practices (e.g. identification and engagement of ESGs, prioritization of ESG concerns, management strategies etc.), expectations, obstacles and SFs of ESM.

Selecting the appropriate respondents is very important to obtain the best data for the phenomenon under study. Similar approach for selecting the Delphi experts was adopted to identify the

appropriate interviewees (Section 2.4.3.1). The practitioners who met the criteria were regarded as suitable to contribute their experiential knowledge on ESM to the study. In fact, some of the identified interviewees were also panellists in the Delphi survey. Table 6.1 reveals the background data of the 16 qualified practitioners from Ghana who participated in the interview sessions. It can be observed that the interviewees have public and private sector experiences in construction project development. Although the sample size is not too large, it is adequate when compared to previous similar SM studies such as Chinyio and Akintoye (2008) who engaged 12 practitioners in interviews. Moreover, they all occupy top leadership positions in their respective organisations and have average SM experience of about 20 years in the GCI. The mix profile (diverse backgrounds, experiences and organizations) of the interviewees indicates the adequacy of the responses and renders the research findings reliable and generalisable.

Table 6.1 Profile of interview respondents

Interviewees	Position in organisation	Nature of related experience	Years of related experience
R1	CEO and Law Practitioner	Private projects	25
R2	Quantity Surveyor	Private projects	6
R3	Senior Quantity Surveyor	Public projects	18
R4	Director	Private projects	35
R5	CEO	Private projects	17
R6	Senior Project Engineer	Public projects	15
R7	Senior Quantity Surveyor	Private projects	14
R8	Senior Architect	Public projects	12
R9	Managing Partner	Private projects	18
R10	Senior Project Manager	Public projects	10
R11	Senior Quantity Surveyor	Public projects	25
R12	Managing Partner	Private projects	27
R13	Senior Architect	Public projects	13
R14	Senior Engineer	Public projects	8
R15	Principal Project Manager	Private projects	37
R16	Director (retired)	Private projects	41
Average experience (years)			*20.06*

Before the interview schedules, the interview guides were issued to most of the identified interviewees. This enabled them to have forethought, prepare for the interviews, and provide the best information possible. All the interview sessions were conducted in the offices of the practitioners and recorded upon giving their consent. For the sake of anonymity, the 16 interviewees are hereafter referred to as R1 to R16 in this research. The interviews were carried out in a flexible manner and the sessions took 30 to 100 minutes of practitioners' time. The information collected from practitioners through audio recordings was transcribed and analysed by means of open coding (content analysis) technique (Cavanagh, 1997). Simple descriptive analysis (i.e. frequency) was used to tabulate and rank the findings from interviews. The number of times that a theme recurs among the responses of practitioners is tallied to provide an objective basis to draw comparisons.

6.2 COMPARISON AMONG THE EXTERNAL STAKEHOLDER GROUPS

The practitioners were asked to name the particular ESG that are most challenging to manage at the project PS and provide the underlying reasons for such a situation. The outcomes of the practitioners' responses are shown in Table 6.2. As shown, the most challenging ESG to manage at the PS are the GAs (7 respondents). The GAs are closely followed by the ALCs (5 responses) and the GP (4 responses). Similarly, Li et al. (2018) revealed that the government stakeholder has the greatest influence during decision-making in Chinese sustainable construction projects. The results show the relevance of all ESGs at the PS of projects in the GCI. Similarly, the influence of ESGs at the project PS has been shown to be much more crucial than their internal stakeholder counterparts (Olander and Landin, 2005). Hence, practitioners should give balanced management attention to the ESGs to guarantee construction project success in Ghana.

The seven practitioners gave some reasons for choosing the GAs as the most challenging ESGs to manage in project. The most important reason is the "complicated and delayed procedures in dealing with them" (6 responses). In order to obtain development permits in Ghana, the applicant is expected to go through 170 days and 16 procedures (World Bank, 2018). These figures are quite high when compared to other countries. Hence, it is much more difficult to obtain permits in Ghana than in many other countries of the world for construction projects. The interviewees R1 and R6 emphasized that,

Table 6.2 Most challenging ESG to manage and underlying reasons

Which among the external stakeholder groups is the most challenging to manage?	**Interviewees (consultants)**	**Total**
Governmental authorities (GAs)	R1, R2, R4, R6, R7, R9, R10	7
Affected local communities (ALCs)	R3, R11, R12, R13, R16	5
General public (GP)	R5, R8, R14, R15	4
What are the reasons for selecting the external stakeholder group?		
Governmental authorities (GAs)		
Complicated and delayed procedures in dealing with them	R1, R2, R4, R6, R9, R10	6
Difficulty in influencing their project stakes	R1, R4, R6, R7	4
Unethical payment of officials to fast track process	R2, R7	2
Affected local communities (ALCs)		
Multiplicity of interests in projects	R3, R13	2
Poor understanding of the project scope and objectives	R3	1
Informal requests to pay huge sums to leaders	R11	1
Difficulty in building consensus due to varying background	R12	1
Difficulty in identifying needs of stakeholders	R13	1
Limited involvement leads to cooperation problems	R16	1
General public (GP)		
Multiplicity and diversity of needs in projects	R8, R14, R15	3
Antagonistic behaviour towards project	R5, R14	2
Poor understanding of project technical issues	R5	1
Misconceptions and scepticism about the benefits of project	R5	1
Ineffective involvement of stakeholders	R14	1
Amorphous and not easily identifiable	R15	1

[…] This is because of delays and bureaucracy……All public officials have their own interests. The GAs already have fixed line of duty and it is difficult to influence them. Practitioners rather need to put their (GAs) mindset into whatever new development to be undertaken……In

comparison, once you entice and excite the GP, you can influence them easily in project (Interviewee R1).

[…] Quite often, the approach of the GAs is quite unique. If you need any information from them, it could take a long time to obtain. Also, they want to take hold of the project in its entirety so that if at any point they feel their involvement is not what it should be, then they find a way of dragging everyone behind. Even though they want to dictate the pace of everything, their pace is quite dragging and may not be the fast approach (Interviewee R6).

From the same Table, four practitioners indicated that GAs are most challenging to manage in project because of the "difficulty in influencing their project stakes". The project stakes may come in several forms including interests, impacts, relationships, expectations, knowledge or contribution (Bourne, 2015). The GAs are extremely powerful due to the entrenched statutory position to sanction the legal and technical suitability of built environment projects. Moreover, the GAs have very high potential to delay or expedite construction projects in the GCI (Chan and Oppong, 2017). The interviewee R4 revealed that,

[…] The GAs have statutory authority to give or refuse approval for developmental projects. If the project contradicts their interests, they become very difficult to manage in project due to their authority. For instance, a building project was recently demolished at Town X by the GAs due to conflict over land ownership. These issues are common with projects in the country.

Two interviewees also pointed out issues relating to bribery and corruption as a challenge usually faced while managing the GAs in projects. They pinpointed that "unethical payment of officials to fast track process" is a major difficulty and it could also impact overall project performance. The World Bank's (2018) Doing Business report ranked 190 countries and 7 economic world regions

in terms of the ease of obtaining permits and licenses for development projects. African countries were ranked at the least average position of 129 among the economic regions. With a score of 66.16, Ghana was ranked at 115th position out of 190 countries. The difficulties in obtaining permits transparently and falling confidence of applicants in the permitting process of Ghana encourage evasion, corruption and fraud by middlemen in issuing false permits (Agyemang et al., 2014). The construction of unapproved structures could face danger of being stalled or demolished altogether. Corruption and fraudulent practices associated with infrastructure implementation in developing countries (Kenny, 2009; Bardhan and Mookherjee, 2000), and engineering safety problems resulting from nonconformity to standards and regulations have attracted scholarly and professional interests (Zeng et al., 2015). Therefore, it has been suggested that introducing transparency initiatives in planning and implementation of projects is key in mitigating fraud and corruption in developing countries (Ferry and Eckersley, 2015). In this case, practitioners could go through the permitting process and receive timely responses without the need of "expediting the process" by paying monies unethically to officials. As explained by interviewees R2 and R7,

> *[…] It is at the PS that we get all the permits for building including the environmental permit. In our current system, permitting is too bureaucratic and not easy at all to obtain. If you want the building permit, you will have to pay some officials money in order to fast track the process. If you want to do it properly, you will spend a lot of unfruitful time chasing permits (Interviewee R2).*

> *[…] Usually, some of the officials tend to have interests that override their professionalism in project (Interviewee R7).*

In terms of the ALCs, two interviewees considered the "multiplicity of interests in projects" as a major problem in managing them. The excessive number of ALC stakeholders in project hinders the effectiveness of the consultation process. The multiplicity of ESGs makes broad-level and meaningful consultation very challenging and administratively unfeasible, and rather increases uncertainty and conflict levels than building consensus (Loosemore, 2006; Yang et al., 2009b; Park et al., 2017). The consequences are heightened where the ALCs are least supportive of the project development agenda (Loosemore, 2006). According to interviewees R3 and R13,

> *[…] In the context of the ALCs (e.g. assemblymen, chiefs, opinion leaders, and the indigenes), everybody wants to make input to the project without understanding what the project structure is really, and this makes managing them very difficult (Interviewee R3).*

> *[…] Being able to identify and meet the needs of the ALCs is very difficult since they may have one million and one concerns (Interviewee R13).*

Managing the GP stakeholders is also considered to be limited by the "multiplicity and diversity of needs in projects" by three interviewees. Considering the context of the GP, they could cover very diverse list of stakeholders in the project environment (Freeman, 1984). They often pose socio-political risks to projects in a manner that is very uneasy to foresee. The stakes of the GP are in most cases very diverse and politically driven, and such stakeholders form temporary pressure groups based on the environmental and socio-economic issues to push for desired changes in project (Mahon et al., 2004). The risks posed by the GP stakeholders are potentially dangerous for successful delivery of project in the GCI. The interviewees R14 and R15 stated that,

> *[…] In most cases, the GP are left out of project planning and they consequently perceive projects as being thrown at them without their involvement.....The concerns and needs of the*

> *GP could be unending and pose a big challenge for the project developers to fulfil. If some of the GP concerns and needs are not appropriately addressed during planning and they suffer consequences upon implementing project, the same people will protest against the project (Interviewee R14).*

> *[…] The GP stakeholders are rather an amorphous body and not easily identifiable. They hardly have a common interest (Interviewee R15).*

Two interviewees perceived the "antagonistic behaviour towards project" as very threatening for ESM success. The GP stakeholders who are not in support of the project may behave unfriendly towards project development. The stakeholders may deliberately refrain from participating altogether or participate in an antagonistic way towards project (El-Gohary et al., 2006). The GP stakeholders adopt such behaviours because of apathy, physical distance from project, or lack of technical knowledge about the project issues (Loosemore, 2006; El-Gohary et al., 2006; Mahato and Ogunlana, 2011). The interviewee R5 contributed that,

> *[…] A lot of times, the GP stakeholders do not understand the technical issues involved and become sceptical about the benefits of some construction projects. Some of the pressure groups (e.g. environmental groups) do have misconceptions about the project. Accordingly, they are usually antagonistic and sceptical about project initially until the issues are explained to them and they come to understand what actually is involved, and the fact that they will not be negatively affected by the project.*

Other reasons were given for the challenging nature of managing the three ESGs at the project PS in Ghana. The reasons mentioned by only one interviewee as challenging the management of ALCs are "poor understanding of the project scope and objectives", "informal requests to pay huge sums

to leaders", "difficulty in building consensus due to varying background", "difficulty in identifying needs of stakeholders" and "limited involvement leads to cooperation problems". Besides, "poor understanding of project technical issues", "misconceptions and scepticism about the benefits of project", "ineffective involvement of stakeholders" and "amorphous and not easily identifiable" were mentioned as challenges of managing the GP groups.

6.3 IDENTIFICATION OF EXTERNAL STAKEHOLDER GROUPS AND THEIR EXPECTATIONS/CONCERNS

The interviewees were requested to share opinions on the methods used to identify the ESGs and their corresponding expectations in projects at the PS. The consolidation of the interviewees' opinions shows that practitioners in Ghana use only four broad methods to identify ESGs in projects and know their expectations as well (Table 6.3). Thirteen CCs revealed "stakeholder consultation approaches" to identify the ESGs and their expectations in projects. In the UK, Chinyio and Akintoye (2008) found out that consultation approaches such as meetings and workshops are employed to identify and meet the requirements of stakeholders in projects. Yang et al. (2011b) also identified public consultation approaches as means of identifying stakeholders' interests and important information in project. The Interviewees R9, R11 and R16 opined that,

> *[…] These days, we usually call for a forum by announcing on air (e.g. radio, television and newspapers) and writing to the necessary stakeholders. Subsequently, the project is introduced to the communities and the ESGs are briefed on what is expected to be undertaken. In such settings, the ESGs have opportunity to express their opinions and concerns in projects. Recently, I was part of a road project in Town Y where a stakeholders' forum was organised. We took advantage to sell the project to the stakeholders. Besides, the stakeholders sought for clarifications about the project and made their concerns known……If there are*

encroachments for instance, practitioners must incorporate such issues into the project plans and make arrangement for compensations (Interviewee R9).

Table 6.3 Methods of identifying ESGs and their expectations

How do you identify the external stakeholders and their concerns/expectations at the planning stage of project?	**Interviewees (consultants)**	**Total**
Stakeholder consultation approaches	R1, R4, R5, R6, R7, R8, R9, R10, R11, R12, R14, R15, R16	13
Intuition/needs assessment	R2, R3, R4, R7, R8, R9, R10, R11, R12, R13, R14, R16	12
Surveys	R5, R14, R15	3
Data from reliable source	R1	1

[…] Identifying stakeholders is easy because we already know that there are statutory and local authorities in every proposed project location. We will just have to write and inform them about the project so they can be part of it. For the traditional rulers and the local people, it is a practice/culture to always go 'knock the door' and inform those stakeholders that we want to undertake a project there. From there on, they will accept us to work in their locality. The chiefs and local people are also invited to organise a durbar to introduce project to the general mass of people. This enables us to interact with the people to know their needs and expectations……Large size projects are usually announced through the media (e.g. newspapers, televisions, radio and other outlets) to invite the general people who may have concerns, so that all concerns could be synthesized (Interviewee R11).

[…] The immediate action is to contact the leaders or representatives of the various ESGs and inform them about the project in mind. At a point, we did not go to see the traditional rulers in one of our project locations and they were furious at us for disrespecting them in project. We had to go and apologise to the traditional authority, explain the situation very well to them, resolve the matter and give them formal recognition in the project. In terms of the GAs, we do go to their offices and formally inform them about the proposed project.

Afterward, we will arrange series of meetings with them to decide and present the required reports for their approval (Interviewee R16).

Twelve experts also considered "intuition/needs assessment" as a mechanism to identify the ESGs and their needs in projects. In previous studies, this important mechanism was similarly labelled as "intuition" and "personal past experience" of the practitioners responsible for identifying multi-stakeholders (Yang et al., 2011b; Chinyio and Akintoye, 2008). The practitioners depend on their past experiences in similar projects to appraise the present project and identify the necessary ESGs. The strengths of "intuition/needs assessment" include clear understanding of previous projects and savings on consultation times. The limitations also include cognitive constraints and unsuitability due to unique project nature (Yang et al., 2011b). The interviewees R7 and R8 commented that,

[…] Before undertaking a project, we draft a schedule of activities. This process helps us to know the people that we need to contact and arrange meetings within the course of project. For the GAs, we officially approach them and present what is required of the project. We also contact the leaders in the communities to communicate the proposed project and take in their concerns where possible (Interviewee R7).

[…] For the GAs, their concerns are usually mandatory for the project to fulfil and it is not possible to get away with them. For instance, if we are developing a project and we are required by the GAs to provide M&E report, we cannot get away with that…..Besides, if we move people from their original spaces in order to make way to put up a facility, we have to take care of the people…..I was involved in a World Bank project where we needed to move people (who were even squatters) from the proposed site, and the World Bank would not allow it. We had to move them to new location where they could continue with their livelihood before

> *implementing projects. So, it is expedient to involve such affected people well and fulfil their needs in projects. Otherwise, we would have been breaking 'the law' or supposed mandatory policy……The religious rights of the ALCs are also more or less mandatory, which the project must meet in timeline. These kinds of needs are legitimate and must be complied with (Interviewee R8).*

The CCs further suggested that "data from reliable source" and "surveys" are important methods used to identify ESGs and their expectations at the project PS in Ghana. The interviewee stated that it is important for practitioners to get available statistical data from reliable institutions. It was argued that information on the patterns of phenomena such as flooding, drainage, earthquake and weather should be obtained from institutions to guide the safe and sustainable design and implementation of projects. Interviewee R1 revealed that,

> *[…] Managers need to obtain data on significant project concerns, maybe from the statistical department where available.*

Surveys are more scientific way of obtaining data on stakeholder concerns with strengths including anonymity resulting in honest opinions, wider coverage of stakeholders, convenience in providing opinions, and larger sample size for proportionally lower cost of administration. The limitations also include bias due to low response rate, gathering of superficial stakeholder opinions, and potential for ambiguity of questions. Surveys enable practitioners to inform and consult the ESGs in project implementation (Yang et al., 2011b). Interviewee R14 said that,

> *[…] The management team do take a general survey (e.g. questionnaire) to find out what the people really need or their concerns about the proposed project. A survey team will go to the*

people and enquire about their needs and expectations in the project. The survey also helps us to know the benefits that the people could derive from the project.

6.4 ENGAGEMENT OF EXTERNAL STAKEHOLDER GROUPS IN PROJECT

The CCs were requested to inform on the methods used to engage the ESGs at the construction project PS. The approaches for engaging the ESGs are consolidated and tabulated (Table 6.4). The choice of the engagement methods depends on the intensity of engagement and the span of ESGs to be covered (IFC, 2007). It is observable that the most used engagement method is through "meetings" with ESG representatives (all interviewee). Yang et al. (2011b) similarly found out that meetings are the most important setting to engage ESGs effectually in projects of Hong Kong. Moreover, Chinyio and Akintoye (2008) revealed that meetings are very relevant operational stakeholder engagement approach in UK construction projects. However, the meetings will only be appropriate where the representatives of the ESGs are well-organised and limited in number. Meetings greatly aid the engagement process by informing, consulting, involving and collaborating with the ESGs in project development (Yang et al., 2011b). The pros of meetings include low cost and ease of organising, specific stakeholders are targeted, uses existing stakeholder networks, face-to-face nature guarantees that participants comprehend issues, and participants could contribute diverse views. The major limitation however is that the collective opinions might not be very representative of the broader stakeholder communities (Yang et al., 2011b). Interviewees R2 and R16 claimed that,

[…] It is not easy to meet all the ESGs in project at a go. Most of the times, we operate through the leaders of the ESGs− either the small chiefs or the assemblymen− who serve as the liaisons between us and the people. Accordingly, if we have any issues, we talk directly to the

liaisons. Sometimes the people also elect their own leaders due to trust issues and channel all their concerns through them (leaders) (Interviewee R2).

[…] Normally, we do direct engagement (e.g. sit-down discussions) with the ESGs……Irrespective of the approach used, we make sure that whatever conclusions we reach with the ESGs are well documented for posterity sake (Interviewee R16).

Table 6.4 Methods for engaging with ESGs

How do you engage with the external stakeholders at the planning stage of construction project?	**Interviewees (consultants)**	**Total**
Meetings	R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16	16
Correspondences	R5, R6, R7, R8, R9, R10, R11, R12, R13, R15, R16	11
Public forums	R4, R5, R9, R10, R12, R15	6
Informal interactions	R1, R2, R4, R5, R6	5
Durbars	R8, R11, R12, R14	4
Newspaper publications	R1, R5, R11	3
Radio broadcasts	R1, R9, R11	3
Telephone conversations	R7, R13, R14	3
Television broadcasts	R1, R11	2
Project information distribution e.g. leaflets	R9	1

Majority of the experts (11 CCs) also outlined "correspondences" as an effective method commonly used to engage ESGs at the project PS in Ghana. The strengths of "correspondences" method include the capture of stakeholder details, ease and convenience in communication, and quickness in solving problems. On the other hand, the major limitation is the difficulty in documenting communication with the ESGs. Correspondences are very useful for information, consultation, involvement, collaboration, and empowerment of ESGs in projects (Yang et al., 2011b). The correspondences method is preferable only in instances where the ESGs are well-organised and could respond properly. Accordingly, it is observed from the inputs of the interviewees that correspondences are usually preferred as an engagement method with the GAs

who are institutionalised when compared to the ALCs and GP stakeholders. For instance, interviewees R7 and R5 stated that,

> *[…] We undertake formal communication with the ESGs. If it is the GAs, we do write to them formally about what we want to do and enquire on their requirements. For the ALCs, we do meet the leaders in the communities, put across our proposals and ask for their inputs (Interviewee R7).*

> *[…] With the GAs, we need to write (letters) to them formally by giving them a brief of what we want to do and further arrange meetings with them. They will then come up with a list of reports we need to submit for their approval. With the ALCs, we ought to visit the leaders, assemblymen and chiefs to inform them about the project and further schedule meetings with them where necessary (Interviewee R5).*

The next most important engagement methods from Table 6.4 are "public forums" and "informal interactions" mentioned by 6 and 5 CCs respectively. Forums create an opportunity for inter-stakeholder discussions and exchange of ideas. However, the limitations also include the potential for heightened dispute among the participants and the inability of some stakeholders to attend due to time or distance constraints. Forums help practitioners to consult, involve and collaborate with the ESGs in governing projects (Yang et al., 2011b). It was revealed by the interviewee R10 that,

> *….] Given the expectations of the ESGs, we do bargain with them to reach consensus. We usually hold forums with the necessary ESGs to let them know about the intended project and also here their views.*

The practitioners use "informal interactions" to gain information from the ESGs in a natural way. The ESGs can contribute their honest opinions naturally without knowing that they are being consulted about project. An example of informal interaction is the "door knocks", which is an engagement approach that ensures face-to-face conversation with the people to understand project issues and elicit their opinions. However, the approach may be limited due to the long duration required to gain enough information probably because the people may not be informed ahead of time (Yang et al., 2011b). Interviewee R6 made mention that,

> *[…] We sometimes go to the communities and informally interact with the local people to elicit their opinions naturally. If they know that we are formally interviewing them, they may not be honest enough in their expressions.*

Besides the discussed engagement methods suitable for involving the ESGs at the project PS in Ghana, other methods were mentioned by few interviewees. These include durbars (4 interviewees), newspaper publications (3 interviewees), radio broadcasts (3 interviewees), telephone conversations (3 interviewees), television broadcasts (2 interviewees), and project information distribution e.g. leaflets, brochures and flyer (1 interviewee). All these methods of engagement may be applicable in the GCI per the context of the project and the ESGs.

6.5 PRIORITIZATION OF THE EXTERNAL STAKEHOLDER EXPECTATIONS

The question "how do you prioritize the concerns/expectations of the external stakeholders in project development?" was asked the experts. The responses of the experts are consolidated in Table 6.5. As indicated, "urgency of the concerns/expectations" and "conformity of concerns/expectations to project scope" were the most common among the interviewees (8 experts respectively). Urgency is an important attribute that helps PMs to prioritize ESGs and their

requirements in projects. The "urgency" attribute denotes the extent to which ESGs' claims and actions necessitate instantaneous management attention in project (Mitchell et al., 1997). Urgency has two parts in project management: the time sensitivity and the criticality of the specific ESG concerns. The time-sensitivity reveals the "degree to which managerial delay in attending to the claim or relationship is unacceptable to stakeholder" whereas the criticality reveals the "importance of the claim or the relationship to the stakeholder" (Mitchell et al., 1997, p. 867). The advantage of considering the urgency of ESG claims in project is that the dynamics of the project ESE could be incorporated into the analysis and prioritizing process. This ensures that ESG concerns and claims are managed as appropriate as possible in the course of project. The technique has been employed to prioritize stakeholder claims in CEM research (Aapaoja and Haapasalo, 2014; Yang, 2014; Nguyen et al., 2018). The interviewees R4 and R5 responded that,

> *[…] If the ESGs come up with concerns, we ask them which of the concerns are major issues that will affect them much. In the forum/meeting, we usually request them to give us information on the concerns that are most crucial, urgent, or important. Even though there is no standard approach, we weigh the concerns and rank them on merit, considering how the ESGs are going to affect or be affected by the project (Interviewee R4).*

> *[…] After the interactions with the ESGs, the team will look at the issues and prioritise based on the scale of criticality. Since the concerns of the GAs like the metropolitan assemblies, planning departments and Environmental Protection Agency (EPA) are permitting requirements, they will take the centre stage. Sometimes, the information we receive from the local people such as commercial viability of the project will also be crucial to consider. For instance, if we plan to put up a shopping mall in a deprived community, and we find out that the project will not be patronized due to the purchasing lifestyle of the people and*

unwillingness of the middle-class to make purchases in that area, then we may see such issue as very critical to inform of continuing or stopping the project (Interviewee R5).

Table 6.5 Prioritization of ESG expectations and concerns

How do you prioritize the concerns/expectations of the external stakeholders in project development?	**Interviewees (consultants)**	**Total**
Urgency of the concerns/expectations	R2, R4, R5, R7, R8, R12, R14, R16	8
Conformity of concerns/expectations to project scope	R3, R4, R5, R6, R11, R12, R13, R16	8
Availability of required resources	R3, R7, R8, R10, R12, R13, R16	7
Legitimacy of the concerns/expectations	R2, R9, R12, R13	4
Recurrence of concerns/expectation among stakeholders	R1, R14, R15	3
Power of the corresponding stakeholder	R2, R10, R11	3
Likelihood of solutions serving more people a purpose	R1	1
Extent of potential impact on stakeholders	R2	1

The "conformity of concerns/expectations to project scope" is a very important consideration in prioritizing ESGs in project. It has been acknowledged that failure to properly define scope at the early project stages commonly originates difficulties in the construction project process (Fageha and Aibinu, 2013). Proper scope definition can potentially minimize escalations of cost and time of projects that involve ESGs. It is rational for the ESG expectations to be properly evaluated against project objectives so that the most relevant ones are met to maximize accruing benefits to the same (Chinyio and Akintoye, 2008). Practitioners normally use the project scope definition as yardstick and guide to determine whether to fulfil or ignore ESG demands in projects. Interviewees R6 and R5 responded that,

[…] We look at the ESG needs and compare with the proposed project scheme before making decision to fulfil the needs or ignore them (Interviewee R6).

[…] We additionally look at the interactions with the local people and see how the identified issues fit into the project plans (Interviewee R5).

In developing countries like Ghana, ESM has not been a priority for many clients and practitioners over decades. The consequence could be observed in the extensive level of project opposition by ESGs in developing countries (Rwelamila et al., 2015). Therefore, client organisations and financiers should make available adequate resources to manage the requirements of ESGs in project development process (El-Sawalhi and Hammad, 2015). Seven interviewees considered the "availability of required resources" as a basis for prioritizing the concerns of ESGs in project development (Table 6.5). The interviewee R16 elaborated that,

> *[…] We do prioritize the concerns of the ESGs based on the resources available to meet the concerns. However, we have to explain to the ESGs enough reasons why some concerns would be fulfilled and others would not.*

Additionally, the other two attributes stated by Mitchell et al. (1997), "legitimacy of the concerns/expectations" and "power of the corresponding stakeholder", were indicated by four and three CCs respectively. Mitchell et al. (1997) stated that legitimacy is largely based on the principle of "who or what really counts" in a project development process. This principle was underpinned by Suchman (1995, p. 574) who defined legitimacy as "generalised perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs, definitions". Besides, ESGs are said to possess power where they have or can access utilitarian, coercive, or normative ability to beckon others to do something, which otherwise would not have been done (Mitchell et al., 1997). The power of ESGs is rooted in their capability to amass political and social forces or pull out resources from projects (Post et al., 2002b). For instance, GAs may have formal power due to their statutory responsibilities in projects. The two attributes have also been adopted in prioritising stakeholders' needs and influences in

projects (Nguyen et al., 2018; Yang and Shen, 2015). The interviewees R2 and R10 gave opinions that,

> *[…] When the project planning begins, so many people will come up with stories—some of them may be true and others may not be true. We first establish whether the concerns raised have legitimate bases or from powerful individuals. For instance, if a concern is raised by the local chief, we cannot just ignore it due to his power. We also look at the extent and time of impact based on the available information. In a road project for instance, we look after the person whose property is going to be affected much earlier ahead of those who will be affected later (Interviewee R2).*

> *[…] We do our best to meet the needs of the powerful ESGs first and then try to also accommodate other ESGs where there is available resource provision (Interviewee R10).*

The other methods for prioritizing ESG concerns and expectations as mentioned by fewer interviewees include "recurrence of concerns/expectation among stakeholders", "likelihood of solutions serving more people a purpose" and "extent of potential impact on stakeholders".

It can be inferred that the findings contradict literature suggesting that urgency, power, legitimacy and proximity are the appropriate considerations in classifying and prioritizing stakeholders (Mitchell et al., 1997; Bourne, 2005; Yang et al., 2011b). The reasons for this in the GCI may include the lack of common documented reference for practitioners to consider and manage the ESGs in projects (Eyiah-Botwe et al., 2016). Because the practitioners depend mainly on their individual mental records and intuition to manage the ESGs, it appears more convenient to use criteria like the direct conformity of expectations to scope and availability of resources to prioritize

ESGs ahead of even legitimacy of the concerns. This may be an explanation for the poor nature of ESM in the GCI.

6.6 OBJECTIVES FOR MANAGING EXTERNAL STAKEHOLDER GROUPS IN PROJECT

In the subsequent session of interviews, the CCs were required to speak on the objectives considered to manage the ESGs in project development. The objectives are seen as the reasons, motives, targets, goals, purposes and aims for managing the ESGs in projects. The objectives suggested by the 16 interviewees are tallied in Table 6.6. The most common ESM objective in construction projects is to "avoid or minimize stakeholder disturbances on project" (10 interviewees). Construction projects suffer many disturbances due to prolonged misunderstanding and conflicts among stakeholders of projects. Ineffective management processes lead to heightened conflict levels among stakeholders, project opposition by stakeholders, and eventual project failure (Rwelamila et al., 2015). The MWDP of Thailand suffered from multi-stakeholder disturbances leading to failure before implementation (IUCN, 2015). Therefore, most interviewees considered project disturbances in the form of conflicts to be an experience that should be minimized or avoided altogether in project. Interviewees R6, R11 and R12 stated that,

Table 6.6 Objectives for managing ESGs in projects

What are your motives/reasons/objectives for managing external stakeholders?	**Interviewees (consultants)**	**Total**
Avoid or minimize stakeholder disturbances on project	R2, R4, R5, R6, R8, R10, R11, R12, R13, R15	10
Eliminate or minimize risks associated with stakeholders	R7, R8, R9, R12, R13, R15	6
Guarantee the project to serve its purpose fully	R3, R4, R8, R15, R16	5
Gain stakeholder buy-in and cooperation for project	R3, R5, R14	3
Understand how stakeholders receive the project	R3, R7,	2
Understand how stakeholders can play roles in project	R3, R8	2
Ensure that the stakeholders own project and become part of it	R14, R16	2
Improve the lives of related people	R1	1
Communicate well the benefits and burdens of project	R5	1
Clarify and document consented concerns of stakeholders early	R6	1
Promote good neighbourliness with the project	R14	1

[…] If we do not manage the concerns of the ESGs well at the PS, we are likely to have problems at the execution stage. I was involved in a project where after inadequate discussions with ESGs at the early stages, the ESGs still came up with new concerns during the execution stage. Hence, the process enables the project team to clarify the concerns of the ESGs from the project commencement to avoid unnecessary conflicts in the future. Our key motive is to bring the concerns of all these ESGs on board at the initial stages, have them documented and agreed upon, so that when the project starts, we will not have issues of people dragging us behind (Interviewee R6).

[…] We are the problem managers of the projects. We are to ensure that the project is peaceful and done successfully. So, anytime there are issues in the project, it is our responsibility to manage them. If we do not fulfil such responsibility, the project will not finish on time. We therefore manage the ESGs to proficiently avoid any actions that will bring about cost escalations such as delays, misunderstanding, vandalism etc. There was an experience where the local communities and police delayed us from undertaking a project because of conflict surrounding the family ownership of the proposed project land. Even though we were able to solve the problem, the project was delayed for a while before implementation (Interviewee R11).

[…] Because time is money, we manage the ESGs in order to ensure the smooth running of the project. Certain times when we are entangled with the ESGs in litigations, the project cannot progress until such issues are amicably resolved. With the GAs, we need to 'court' and let them become interested in what we want to undertake. Once we manage to do this, it can facilitate the permitting problems faced due to bureaucracy and delays (Interviewee R12).

It can be observed further from the same Table 6.6 that six practitioners manage ESGs to "eliminate or minimize risks associated with stakeholders" in projects. By investigating international construction projects, Al-Sibaie et al. (2014) found out that conflicts originating from social and organisational issues explain about 27% of variations in project performance. Morris and Hough (1987) also revealed large scale projects that escalated rapidly in terms of cost and time during implementation resulting from the nature of multi-stakeholder interactions. Hence, proper management processes and techniques are implemented on the ESGs to pre-empt all associated project risks. The interviewees R8 and R9 have these to say,

> *[…] At the PS, we have to involve those who matter for the project to achieve what it is intended for. We cannot just design and deliver a project without the input of ESGs, who are the beneficiaries or end users. During engagement exercises, some of the ESGs can inform or even impose on us that they want the indigenes to be part of the project implementation. At times, we realise that the workers supplied by the community may not be the best for the job. If we know these things from the beginning, we will get prepared ahead of time for such unforeseen circumstances. The motive is to be able to capture all the things required to make a project successful. It is not the best when projects are at the tail end and people start bringing issues that cannot be solved. Even if the issues could be solved, they may result in project cost and time overruns (Interviewee R8).*

> *[…] We do manage the ESGs in order to have successful project, thus, we do not want to experience any bottlenecks in the course of project. When all possible bottlenecks are looked at during the PS, we would end up executing problem-free project (Interviewee R9).*

Additionally, five CCs see the ESM process aimed to "guarantee the project to serve its purpose fully" (Table 6.6). Studies have shown that SM processes have impact on the lifecycle project success (Oppong et al., 2017; Karlsen, 2002; Bourne and Walker, 2008). Construction projects are considered successful where the deliverables are operationalised fully to the satisfaction of the recipients during the in-use stage. In the Heathrow Terminal 5 project, some of the ESGs were dissatisfied due to the operational inefficiencies of the facilities for some time (Davis, 2016). Hence, the CCs suggested that effectively managing the ESGs could help raise project lifecycle performance to the desired expectations. The interviewees R15 and R16 commented that,

> *[…] The main intention will be to ensure that the project serves its purpose well upon implementation (Interviewee R15).*

> *[…] Largely, the ESGs are going to be using the facilities upon delivery. SM is therefore important so that the ESGs will understand the facility very well, properly maintain it and use it to the best level. This will ensure that the project serves its purpose fully over lifetime (Interviewee R16).*

Besides, three CCs perceive "gain stakeholder buy-in and cooperation for project" as an essential purpose to manage ESGs in project (Table 6.6). The SM process is executed to convince the ESGs to support the project purpose instead of undertaking actions that could impact project adversely (Cleland, 1988). The ESGs are the final recipients of project outcomes so it is expedient to ensure that they support the project purpose to be successful (Mok et al., 2015). This is achievable where the project team market the project well to the ESGs through the media and other communication platforms to avoid undue misconceptions, misunderstanding and controversies. The public participation programme has also been suggested as a mechanism to promote project, mitigate

conflicts, and guarantee that the numerous ESGs accept the project development (Mahato and Ogunlana, 2011). Effective SM has been identified as an appropriate means for the stakeholders to accept project and support its implementation (El-Sawalhi and Hammad, 2015; Karlsen et al., 2008). The interviewees R5 and R3 contributed that,

> *[…] Depending on the project nature, there may be kinds of positive and negative impacts on the people in those communities. The SM process is to remove any hindrances and gain the peoples' cooperation. For the GAs, if we do not meet their requirements by getting permits, they will come and stop the project from going on because of the statutory authority they possess. The ALCs may sometimes be able to stop the project from going on and may not give the cooperation desired. Hence, it is good to engage the ESGs well, let them understand what we are going to do, and how it is going to rather benefit and not harm them. This will make them support the project and not act against it through vandalism, theft or sabotage (Interviewee R5).*

> *[…] Every project is expected to perform so we have to really understand how each stakeholder receives the project. When we initiate a project and we do not have stakeholder buy-in and understand their expectations in the project, we will start facing challenges. Hence, it is very important to get all the stakeholders on board for successful project (Interviewee R3).*

Other objectives mentioned by two interviewees respectively are "understand how stakeholders receive the project", "understand how stakeholders can play roles in project" and "ensure that the stakeholders own project and become part of it". Moreover, "improve the lives of related people", "communicate well the benefits and burdens of project", "clarify and document consented

concerns of stakeholders early" and "promote good neighbourliness with the project" were suggested by single interviewees. The objectives generally guide the practitioners in choosing the right approach to manage the ESGs. For instance, if the core objective of ESM process is to "improve the lives of related people", the practitioners could opt for the management-for-stakeholders approach. In this approach, the practitioners consciously engage the ESGs, protect their rights in the project, promote fairness, and ensure that the project benefits them. This is useful in the contemporary construction industry where projects are delivered in an equitable and sustainable manner (Freeman et al., 2007).

The results in the Table 6.6 indicate that the main motives of the practitioners in managing the ESGs are to deal with the "negatives" that the ESGs can bring on project rather than considering their contributions. This is understandable because most ESGs are considered as enemies rather than friends of project. The ESGs may adopt strategies including coalition, direct action and conflict escalation as means to dynamically shape their salience attributes in construction projects (Aaltonen et al., 2008; Nguyen et al., 2018). They may further fall on other sophisticated approaches such as scheming on the media, vandalism and community picketing to gain the attention of practitioners (Moore and Warren, 2006; Teo and Loosemore, 2012). In Ghana, ESGs were able to oppose and stop the implementation of the STX mass housing project (Owusu, 2012). Therefore, the practitioners primarily manage the ESGs to exercise proper control over their distractive actions in project.

6.7 PRACTICAL MEASURES FOR MANAGING EXTERNAL STAKEHOLDER GROUPS AND THEIR EXPECTATIONS

The CCs were again asked to name some practical measures they adopt to effectively manage the ESGs at the PS of construction project development. The contributions of the CCs are captured in

Table 6.7. The most common strategy among the consulting experts is "compromise to stakeholders only within project scope" (10 CCs). Project scope definition clarity is found to significantly and directly impact the performance level of projects covering cost, quality and time (Xia et al., 2015). Changing or new project requirements due to the invisibility of stakeholders or deficient engagement exercises could negatively affect the performance of projects. Hence, it is crucial for the practitioners to clearly define the scope of project at the early stages and manage ESG expectations within the constraints of the scope. The interviewee R6 argued that,

Table 6.7 Practical measures for managing ESG expectations

What practical measures do you put in place to manage the external stakeholders and their concern/expectations properly in project?	**Interviewees (consultants)**	**Total**
Compromise to stakeholder demands within project scope	R1, R2, R6, R9, R11, R12, R13, R14, R15, R16	10
Ensure that stakeholders understand the project context and their roles	R3, R7, R13, R15, R16	5
Manage stakeholders with social responsibilities	R2, R4, R8, R9	4
Use effective and prompt communication systems to reach stakeholders	R5, R10, R13	3
Formal documentation of all stakeholder interactions	R6, R9, R10	3
Use social/community workers to engage stakeholders well	R5, R15	2
Assure stakeholders of the potential project benefits	R5, R10	2
Identify the external stakeholders who are key in project	R3	1
Respect and treat all stakeholders fairly	R4	1
Transparency in dealing with stakeholders	R6	1
Assess potential stakeholder risks and strategize	R8	1
Seek support from higher authority to manage stakeholders	R8	1
Resolve the disputes and conflicts among stakeholder issues	R11	1

[…] There may be circumstances where we compromise and take ESG concerns easily, especially at the initial stage. There may also be scenarios where strong policies or reasons may prevent us from compromising to certain needs of the ESGs. In such cases, we must be transparent and explain to them with strong justifications why those needs cannot be accommodated in the project scheme. For powerful stakeholders like chiefs or government officials, we are likely to always take in their needs in project. However, we will ask them to

write formal letter indicating their needs or requests. This will be kept as evidence for any future reference.

The interviewee R11 was concerned about whether the stakeholder demands could possibly lead to problems related to standards and codes of ethics. The interviewee R11 stated that,

[…] As CCs, it is expected of us to master dispute resolutions skills in order to handle the conflicting stakeholder issues in projects. We mostly compromise to some ESG concerns because everything is not in our hands and we need to seek the help of the ESGs to undertake the project successfully. However, if the concerns are technical and go against the standards and codes of ethics, then we will not compromise at all.

The next most common practical measure that practitioners adopt in managing ESGs is "ensure that stakeholders understand the project context and their roles" (five CCs). Every stakeholder has a duty to fulfil in the project to ensure that success is realised. In line with the resource dependency theory (Pfeffer and Salancik, 1978), the stakeholders are perceived as possessors of resources that are important for the project to be successful and create value for same stakeholders (Eskerod and Vaagaasar, 2014). Accordingly, the "integrative strategies" will result in outcomes that are beneficial for both project and the stakeholders (Savage et al., 2010). The practitioners must therefore make sure that the ESGs clearly understand the project mission and how they will participate in project. The interviewees R3 and R7 confirmed that,

[…] Primarily, we have to know who the key stakeholders are in the project. It is our responsibility to inform them about the context of the project and what they are expected to do in project e.g. supplying some construction materials and job opportunities available. The

moment they understand these things, they become assured of benefits in the project. Then, we will more likely have their buy-in and cooperation in project (Interviewee R3).

[…] Managing ESGs at the PS is not usually difficult like the execution stage. Even though some community leaders may demand for 'tokens', which we are compelled to do at times as custom demands, the most important thing for us is to make our presence and motives known to the local authorities that we are going to do something of this nature. This action alone is enough to gain their support (Interviewee R7).

Among the experts, "manage stakeholders with social responsibilities" is a popular measure used to manage ESGs in projects (4 interviewees). Yang and Shen (2015) emphasized the need for practitioners to consider five different types of social responsibility whiles managing stakeholders i.e. legal, economic, ecological, cultural and ethical responsibilities. All these responsibilities are expedient to achieve the sustainability objectives of construction projects. Practitioners are in charge of outlining and matching the social responsibilities with the specific ESGs and addressing them accordingly so as to be successful in the project development. In fact, managing the ESGs with the required social responsibilities is the core duty of the PMs in the PSE (Yang and Shen, 2015). Similarly, El-Sawalhi and Hammad (2015) and Park et al. (2017) considered this measure as a significant activity in the entire SM process. The interviewees R2 and R8 had this to say:

[…] For the GAs, we listen to their requests because it is a matter of the law−− unless it is someone trying to take advantage of the system to demand for money. For the ALCs, if compromising does not affect our project aim, we compromise in most cases to gain their support. Many times, their demands have to do with money. Whomever we must pay some money, we make sure to pay and move on with the project. For instance, if a GHC 4,000

demand by such stakeholders can halt a GHC 800 million worth project, then we pay and progress quickly irrespective of how right or wrong the claims may be. Besides, we do give in to those traditional demands of stakeholders which are considered sacred and indispensable in project. In an instance, we faced a peculiar problem while cutting through a mountain and had to stall the project for a whole day. Upon cutting the mountain, the place gets filled up again overtime. The locals claimed it was caused by the gods, and so we gave them money to buy cows and perform some rights before we could continue with the project the following day (Interviewee R2).

[…] Considering social responsibilities as part of your strategy is also key to manage the ESGs (Interviewee R8).

Additionally, three CCs suggested that "formal documentation of all stakeholder interactions" is an important practical measure used to manage the ESGs in projects (Table 6.7). In developing the project purpose and requirements of stakeholders, Aapaoja and Haapasalo (2014) recommended that the elicitation, analysis and documentation processes should be carried out in a systematic and standardized format so that the requirement information of stakeholders may not change over time. Aside, the output of the requirement development process should be validated continuously to ensure accuracy, completion and fulfilment of stakeholders' intent and expectations (Aapaoja and Haapasalo, 2014). The engagement exercises are fashioned to elicit stakeholder information that is necessary for project development success. Failure to formalise the stakeholder requirement development process could become disastrous in the future, particularly because the ESE is very dynamic (Pajunen, 2006; Eskerod and Vaagaasar, 2014; Aaltonen and Kujala, 2010). For instance, Mahato and Ogunlana (2011) found out that inaccurate and untimely information from the early project stages results in interface conflicts. Hence, the interviewees R9 and R10 commented that,

[…] All the ESG concerns and expectations are to be well documented and channelled to the responsible practitioners to handle. We do not have to absolutely neglect the ESG needs and expectations in project. However, it is recommended that the respective needs and expectations of the ESGs are appropriately documented for future references (Interviewee R9).

[…] We take the responsibility to formally document whatever opinions that are collected at stakeholder gatherings before implementing them. If we implement their wishes and something goes wrong later, they will blame us for the problems caused. Hence, if the ESGs pile pressure on us to meet certain expectations, we definitely ensure that they are backed with necessary documentation for reference in the future (Interviewee R10).

Another three CCs revealed that "use effective and prompt communication systems to reach stakeholders" is very crucial measure to ensure success in the management of project ESGs (Table 6.7). Landin (2000) argued that the success and usefulness of construction projects in the long term to satisfy the stakeholder expectations are contingent on the decisions mutually reached and the carefulness in communicating with the stakeholders. In the context of Swedish railway projects, the communication process with ESGs was expected to be open, cooperative, trustworthy, respective and informative (Olander and Landin, 2008). Effective communication has been regarded to be very crucial for successful construction SM (Yang and Shen, 2015; Park et al., 2017). The interviewees R5 and R13 stated respectively that,

[…] We emphasize on policies to include experienced social/community workers as part of the team to engage the public given that the people may not be well structured. The main difficulty is with the ALCs who out of misunderstanding, mischief, brainwashing or cultural differences, some of them may think we intend doing something that will affect them adversely.

> *The technical persons might not be able to adequately address or communicate with the people effectively. So, it is important to use professionals like the social workers or public relation officers, who have experience in dealing with the communities, to organise programmes that will bring the people on board, gather their concerns, and assure them of the project benefits. The GAs are well structured so there is always a formal approach in dealing with them through meetings and good communication (Interviewee R5).*

> *[…] We have to communicate properly and timely with the ESGs at the PS. In planning project, we set up effective communication channels to interact with the ESGs. With the traditional chiefs for instance, we need to go and sit with them and discuss what we intend to do at the proposed location. However, we need to measure the level of information to give each ESG. Some people do not require detailed information, but we must be clear in reaching them. This will ensure that they understand the project objectives very well and give us the necessary support for implementation (Interviewee R13).*

From the same Table 6.7, two interviewees respectively mentioned "use social/community workers to engage stakeholders well" and "assure stakeholders of the potential project benefits" as other practical measures used by practitioners to manage the ESGs in project development. Six more factors were identified through the interviews. However, they were only pinpointed by individual CCs (Table 6.7).

It can be seen from the Table 6.7 that the management strategies are mainly to involve the ESGs more in the project. Practitioners develop strategies to counteract or align ESGs' expectations with the goals and objectives of the project based on their adversarial or supportive stakes. The practitioners believe that by educating the ESGs about the project and its benefits, they are likely

to cooperate in developing the project successfully. Proactive strategies help curtail the unpreparedness of practitioners towards the adverse actions of ESGs (Cleland, 1988). If the strategies are implemented accurately, adversarial ESGs could be transformed into supportive ones for the benefit of project. Despite their troubles, the ESGs are seen as important people and entities who could become supportive in ensuring project success.

6.8 MANAGING THE DYNAMICS IN THE EXTERNAL STAKEHOLDER ENVIRONMENT

It has been suggested by successive literature that the characteristics, attributes, positions, interests and expectations, attitude, and salience of stakeholders differ from one stage of project to the other (Aaltonen and Kujala, 2010; Eskerod and Vaagaasar, 2014; Elias et al., 2004). With the purpose of understanding this reality in the GCI, the CCs were given opportunity to comment on the mechanisms adopted to consider and deal with the dynamics in the ESE. Seven factors were consolidated and prioritized based on their commonness among the interviewees (Table 6.8).

Table 6.8 Ways of considering and dealing with external stakeholder dynamics in projects

How do you consider and deal with the dynamics (e.g. interests, relationships, positions, power etc.) in the stakeholder environment?	**Interviewees (consultants)**	**Total**
Treat every person and issue with utmost respect and fairness	R2, R4, R5, R6, R12, R13, R16	7
Establish clear project scheme to accommodate changes	R3, R4, R11, R14, R15, R16	6
Proper documentation and endorsement of consensual decisions	R6, R8, R9, R16	4
Proactiveness and planning for long term	R1, R10, R13	3
Establish good rapport with all stakeholders	R2	1
Seek support from more powerful persons to manage stakeholders	R7	1
Identify and involve as much stakeholders as possible from start	R8	1

The most important approach for managing the dynamics of the ESE is "treat every person and issue with utmost respect and fairness" (7 experts). The respondents have the opinion that practitioners should promote equity while handling the various expectations of the ESGs. It is widely acknowledged that uncertainties are likely to multiply through the practise of injustice and

reverse accountability in project management (Atkinson et al., 2006). The perception of injustice and unfairness among stakeholders increases conflicts, hinders stakeholder cooperation, and dampens the efficacy of projects (Barden et al., 2005; Fan and Nixon, 2015). Beliefs about fairness and justice are relevant in establishing if a proposed project will be opposed by the ESGs (Frey and Oberholzer-Gee 1996). Fairness is connected with the process of inputting stakeholder contributions and making mutual decisions in projects (Boudet and Ortolano, 2010). For instance, compulsorily acquiring lands from individuals and communities to undertake projects in developing countries is very risky where the government lacks supporting legal frameworks and fair policies. Moreover, the risk is heightened where such complex social phenomenon has both political and monetary implications for the government (Babatunde et al., 2017). Since stakeholder needs, attributes and relationships are likely to change, the practitioners should ensure a fair approach in managing all (new) stakeholder issues in the project development. Through engagement exercises, the ESGs would not only become self-determined and empowered in project, but the management of their requirements will be grounded in the principles of justice and fairness (Wallerstein and Duran, 2006). Besides, the principled negotiation approach hinges on basic interests, mutually satisfying choices, and fair standards which leads to wise agreements (Fisher and Ury, 1981). The interviewees R5 and R13 gave opinions that,

> *[…] It might be difficult to satisfy peoples' changing interests. Since we cannot possibly meet all needs, we must get the ESGs on our side and deal honestly and transparently with them. It will be important to act as professional as possible and not take sides on any stakeholder issues (Interviewee R5).*

> *[…] We focus on managing all the ESGs very well and fairly. No stakeholder is 'inferior' in any way. Everyone plays a key role in the project, and the power-interest grid can change*

over time. Fundamentally, we observe the ESGs very well and analyse their changing situations properly. Hence, we manage each ESG very well by knowing what they want and fulfilling them as much as possible (Interviewee R13).

The next most common approach for dealing with the dynamics in the ESE is "establish clear project scheme to accommodate changes" (6 experts). Every project must have a formal arrangement to entertain new or changing requirements of the ESGs. Brief development occurs in construction projects mainly due to change orders. Thus, brief development increases across project lifecycle due to unforeseen circumstances and the changing requirements of stakeholders in projects (Othman et al., 2005). A few approaches have been suggested to effectively manage the changing requirements of stakeholders in project development (Vuorinen and Martinsuo, 2018; Butt et al., 2016). A feasible change management arrangement should be developed to guide the practitioners on accommodating new or changing ESG requirements in project. The interviewees R3, R11 and R15 stated that,

[…] We start a project by drawing a project structure that all concerns and personality-related issues must fit into. The conceptual meetings are very important because all project arrangements and approval channels to accommodate changes will be clearly specified. If new issues come up, the arrangements will be followed to effect changes where necessary (Interviewee R3).

[…] When a project is initiated, there are lots of things that cannot be naturally covered entirely. As the project progresses and those issues come up, we make allowances for them and resolve the issues. Usually, if the changing interests and requests are made by the formal authorities, we make allowances to meet them accordingly. However, we are able to ignore

those other changing interests from less powerful stakeholders that have not been captured from the start of project (Interviewee R11).

[…] It may be possible that in the period of project delivery, certain needs and priorities of ESGs might change. This situation might call for review of designs and other necessary actions. It will involve extra costs which might not have been envisaged earlier. However, it would be better to incur extra cost to ensure that the project is useful to the users than otherwise (Interviewee R15).

Four consulting experts argued that "proper documentation and endorsement of consensual decisions" will help practitioners to properly handle the dynamic interests, attributes and relationships of the ESGs in projects. Multi-stakeholders are the source of disagreements and uncertainties leading to the phenomenon of "soft complexity" in projects (Burnes, 2005). The soft complexity is a dynamic state of interrelated activities involving diverse stakeholder interests and opinions (Atkinson et al., 2006). Efficient negotiation encourages the ESGs to be committed to the project and optimizes agreements on conflicting issues. Besides, effective engagement of ESGs may increase disagreement levels at the early stages and increase agreement levels at the latter stages of projects (Mahato and Ogunlana, 2011). It is recommended that all agreements reached with the ESGs should be properly documented and even endorsed by the relevant parties (Aapaoja and Haapasalo, 2014). The interviewees R6 and R16 answered that,

[…] ESGs most often like to request for changes or add further requirements to projects. Even some ESGs could make requests that are way beyond what the project could offer. We need to be frank with the ESGs on what the project could offer or not. Particularly, all requested

needs or changes should be well documented and endorsed for future references (Interviewee R6).

[…] It is very important to document all consensual decisions taken with the ESGs while planning projects. So, even if there is change in the ESGs or their interests across project timeline, we always refer them to the prior agreements as the first option. Otherwise, we try to accommodate the new issues if there is enough allowance made in the project for that. In the political environment especially, we try to be as transparent as possible with the ESGs and let them understand all the agreements reach before then (Interviewee R16).

In addition, three CCs suggested "proactiveness and planning for long term" as a remedy for the dynamic effects of the ESE (Table 6.8). It is imperative to manage and fulfil the expectations of the ESGs across the project lifecycle as a criterion of success (Turner, 1999). Success of construction project hinges on the practitioners planning for the long-term instead of short-term reactive approach to issue occurrences. For instance, building and sustaining long-term relations with the ESGs is of exceeding relevance in project development (Latham, 1994). Olander and Landin (2008) assessed 2 Swedish railway project cases and revealed how the PMs handled ESG conflicts. In the first case, the management team took a proactive approach in dealing with potential conflict escalations. They interacted rigorously with the affected stakeholders on the issues that had relevance to their satisfaction from scratch, thereby curtailing open stakeholder conflicts. The management team responsibly managed the public relations by informing and communicating with the ESGs; they proactively built up good relationships with the ESGs; and these led to the high-level project acceptance by ESGs. In the second case however, the reactive approach and lack of timely communication emanated discontent among some ESGs who had opposing views. Consequently, strong pressure groups emerged to actively attempt changing

project outcomes according to their expectations (Olander and Landin, 2008). The two cases show that the proactive ESM approach will be more beneficial for project success as extensive levels of dynamics in the ESE would be curtailed. The interviewees R1 and R10 had these to say,

> *[…] Because there will be changes in project, the people's interests will not remain the same. Therefore, if we are planning for the people, we must plan for long term. We should be able to find out what is going to happen in the future to the plans that we have. It is only when we are proactive and look up to the future that we will be able to come up with good plans (Interviewee R1).*

> *[…] We first (re-)classify the ESGs and requirements very well using various management techniques and know those on a higher or lower scale relative to the project. Once we identify such changes in interests, we handle them per the updated information. This means that if some ESGs become more powerful in project, we must give them more attention, and the channel and intensity of communication with them may probably have to change accordingly. We should be prepared for such with the experience in previous similar projects (Interviewee R10).*

Single CCs also shared opinions that "establish good rapport with all stakeholders", "seek support from more powerful persons to manage stakeholders" and "identify and involve as much stakeholders as possible from start" are good strategies to overcome the dynamic circumstances of the ESE (Table 6.8). These factors were equally identified in previous studies as critical elements of good SM process contributing to construction project success (Yang and Shen, 2015; Park et al., 2017; El-Sawalhi and Hammad, 2015).

6.9 INDICATORS OF HOW WELL THE EXTERNAL STAKEHOLDER GROUPS ARE MANAGED IN PROJECT

At this stage of the interview sessions, the consulting practitioners were requested to contribute on the ways by which they determine if the ESGs are properly managed in projects i.e. if the ESGs are satisfied in the project delivery. The findings are revealed in Table 6.9. It is observable that five factors were suggested by the experts. The most common factor among the experts was "feedback from stakeholders e.g. potential improvement in lives" (12 experts). According to Liu et al. (2018a), majority of existing conflicts are associated with the transparency and asymmetry of information, and thus, making efficacious publicity mechanisms a necessity. Effective publicity of project information will generate the right consciousness of actual social impacts (e.g. compensation and resettlement arrangement) to prevent rumours and panic of ESGs due to biased project risk perception. Besides, the project developers ought to pay attention and respond promptly to the reactions and attitudes of the ESGs receiving project information to prevent misunderstanding and conflict occurrences. In effect, the project developers are expected to consider the feedback obtained from the ESGs to know the genuine demands and expectations of the ESGs in projects (Liu et al., 2018a). The feedback received will inform the responsible practitioners on the satisfaction situation of the ESGs according to the input and fulfilment of their expectations and needs in project development. It is argued that the stakeholders who are dissatisfied or unsupportive of project would always look for an opportunity during engagement sessions to show recalcitrant attitudes or deliberately through the feedback information reaching the responsible practitioners (Purvis et al., 2015). A lot of CEM scholarly works have shown the need for practitioners to evaluate the feedback information from the ESGs to monitor their resistance or support for project (Takim, 2009; Yitmen, 2015). The interviewees R1, R5 and R16 said that,

[…] We listen to what people say with respect to what we propose to do e.g. whether people's lives would be improved significantly or not (Interviewee R1).

[…] Because it is at the PS and the project has not started for us to see any (re-)actions, the feedback that we get from the ESGs helps us a lot in determining if they are fine with project development. We gauge the mood of the people and see how our message and actions have been received regarding the project development. The kind of feedback we get from the ESGs about the project is a key way of realizing if we are managing them well (Interviewee R5).

[...] During and after meetings with the ESGs, we always try to get feedback from them on whether they are fine with the project decisions reached or they have further worry about the project. Due to the possibility of dominance by the more powerful stakeholders during meetings, we try to get the feedback at individual and group levels of the external stakeholders. If they are not happy, they will definitely let us know (Interviewee R16).

Table 6.9 Indicators of how well ESGs are managed in projects

How do you know if you are managing the related external stakeholders well in project?	**Interviewees (consultants)**	**Total**
Feedback from stakeholders e.g. potential improvement in lives	R1, R2, R4, R5, R7, R8, R9, R12, R13, R14, R15, R16	12
Level of project disturbance by stakeholders	R2, R3, R6, R10, R11	5
The extent to which stakeholder issues are resolved	R6, R8, R9, R11, R14	5
Stakeholders' willingness to support and cooperate	R4	1
Extent of project scope change due to interactions with stakeholder	R6	1

The next most important factor on the list "the extent to which stakeholder issues are resolved" was contributed by five experts (Table 6.9). The issues, expectations or concerns of the ESGs in projects contribute greatly to their satisfaction. This is because ESGs pursue expectations in line with social, economic and ecological situations created or intervened by the project development (Chan and Oppong, 2017). The ESGs feel satisfied when they perceive that their expectations and

concerns are considered or fulfilled in projects. Hence, it is important for practitioners to estimate the satisfaction of the ESGs with the project development by assessing if their expectations and concerns have been appropriately addressed. It has been considered that the ESGs are more likely to support project development if their requirements are incorporated into plans (Olander and Landin, 2008). Additionally, practitioners giving adequate attention to comprehensive engagement exercises is expected to improve project development and support of the ESGs (Manowong and Ogunlana, 2006). A premise for the failure of the XTS housing project of Ghana was the perceived dissatisfaction of the ESGs because the responsible authorities neglected to manage their expectations and concerns in project (Attobrah and Otchere-Darko, 2010; Owusu, 2012). The interviewees R8, R9 and R14 confirmed this by responding that,

> *[…] If we conduct project meetings with the ESGs and we resolve the issues that concern all the people represented, we do perceive that we are managing them well (Interviewee R8).*

> *[…] Feedback given during regular meetings with the ESGs will indicate if they are satisfied or not with the consideration of their needs. If we are unable to meet some requests, the ESGs will let us know during meetings. It is our responsibility to let them understand the constraints of the project and why we cannot meet certain requests (Interviewee R9).*

> *[...] From calls of representatives and occasional visits into the community, the feedback and feelers obtained are analysed by the consulting team to determine how best the concerns of the community have been addressed (Interviewee R14).*

Furthermore, five consulting experts perceived that the "level of project disturbance by stakeholders" would make them realise if the ESGs are satisfied or dissatisfied with project development (Table 6.9). The ESGs could use crude methods like sabotaging, boycotting or protest

to disturb project progress where they feel they deserve better from project or the project will negatively affect them. Such conflicting interfaces generated in projects could become very disastrous for project success. For instance, the MWDP of Thailand has lasted over three decades at PS due to the unresolved conflicts among the multi-stakeholders (IUCN, 2015). The conflicts and disputes become much prevalent with increasing diversity of the stakeholders, interests and expectations, and project controversies (Oppong et al., 2018; Wang et al., 2019). Several approaches have been proposed and demonstrated to curtail the levels of conflicts in projects so that the satisfaction of ESGs could be improved and projects delivered timely (Mahato and Ogunlana, 2011; Innes and Booher, 1999). The interviewees R3 and R11 answered the question that,

> *[…] By observing the project programme, we will know if the project is on track or not. If we are performing well and there are no distractions from the ESGs, we will recognize that we are dealing with their issues quite well (Interviewee R3).*

> *[...] If there are no confrontations, protests or issues about our plans or activities, then that is an indication that we are managing the ESGs well. However, if there are so many complaints or demonstrations and/or related publications in the media, then we know that the ESGs are not happy with the project. In a certain project that I was involved recently, we had very smooth planning and implementation without any adverse confrontations with the ESGs. Hence, I can confirm that we have managed the concerns of the ESGs very well and they are equally happy with the project (Interviewee R11).*

From the same Table, the factors "stakeholders' willingness to support and cooperate" and the "extent of project scope change due to interactions with stakeholder" were suggested by only single CCs respectively.

6.10 EXPECTATIONS OF EXTERNAL STAKEHOLDER GROUPS IN PROJECT

The experts were asked about the common expectations and concerns that the three ESGs bring on construction projects in the GCI. The findings from the interviews are summarized in Table 6.10. The expectations have been classified in line with the adopted three ESGs of construction projects. In terms of the GAs, the most common expectations are "economic growth and job opportunities" and "fulfil minimum statutory regulations and standards" (7 experts separately). Governments usually implement projects for socio-economic reasons whiles the private sector implement construction projects purely for economic reasons. GAs have great expectations for the project development to provide job opportunities for the citizens and drive economic ventures (Palerm, 1999). Businesses and local economic activities like supply of construction materials, commerce and transportation services could harmoniously sprout through construction project development (Li et al., 2013). Governments also expect to gain economically through the increasing accumulation of taxes and the economic values added by business ventures (El-Gohary et al., 2006). The GAs undertake the fundamental responsibility of regulating the development of projects in the built environments of Ghana. The GAs such as the metropolitan, municipal and district assemblies have statutory power of giving permits to developers upon meeting set down standards such as safety of construction deliverables against fire, stress and earthquakes (Zhang and El-Gohary, 2016; Olander and Landin, 2005; Doloi, 2012). Interviewees R5 and R16 responded that,

> *[…] The GAs are concerned with the project meeting the minimum regulations and standards that have been set so as not to cause any public safety issues and concerns. Sometimes, they look at how the project is going to impact positively on the communities like the economic benefits (job creation) and social impact on the people (Interviewee R5).*

> *[…] The GAs want to make sure that the project fits into their policies and standards. Besides, they try as much as possible to ensure that the project can employ some local people instead of foreign labour so the local people can benefit socio-economically from the project (Interviewee R16).*

The next most common concern of the GAs as suggested by six interviewees is mitigating "environmental problems due to development" (Table 6.10). The EPA is a subsidiary of the government of Ghana with the entrenched goal of protecting and upgrading the environment. Some of the environmental problems associated with urban development in Ghana and other African countries include depletion of natural environment, destruction of buffer water resource zones, and heightened need for emergency management (Korah and Cobbinah, 2017; Quagraine, 2011). It has been reported that the recent floods in Accra were due to human negligence, poor sanitation and occupation in waterways (Cobbinah and Darkwah, 2017). The environmental problems faced in Ghana presently pose great risks to humanity and human settlement phenomena (Quagraine, 2011). In order to solve the environmental problems in Ghana, there will be a need to implement proactive and pragmatic measures through the GAs to control urban construction development projects. The interviewee R10 informed that,

> *[…] The GAs are concerned about projects not hurting the environmental conditions of the location such as vegetation, erosion and flooding.*

Table 6.10 Expectations of the ESGs in projects

What are the main concerns/expectations of each external stakeholder group in construction project development?	**Interviewees (consultants)**	**Total**
Governmental authorities		
Economic growth and job opportunities	R1, R2, R3, R4, R5, R9, R16	7
Fulfil minimum statutory regulations and standards	R2, R5, R8, R11, R13, R15, R16	7
Environmental problems due to development	R4, R7, R8, R10, R11, R12	6
Pedestrian and vehicular traffic situation during project development	R4, R10, R11, R12	4
Capacity building for the people	R3, R5	2
Zoning of project to fit into the area setting and layout	R7, R11	2
Improve the living standard of people	R4	1
Meeting national and local development agenda	R6	1
Involvement in project implementation	R13	1
Project serving its lifecycle purpose efficiently	R14	1
Affected local communities		
Economic growth and job opportunities	R2, R3, R4, R5, R7, R8, R9, R10, R11, R14, R15	11
Align project with religious and cultural beliefs	R2, R5, R6, R7, R10, R12	6
Environmental issues e.g. pollution of air, sound and water bodies nearby	R4, R5, R14, R15	4
Involvement of stakeholders in project development	R6, R8, R9, R13	4
Property loss and compensation for relocation	R4, R7, R15	3
Improvement in livelihood and wellbeing	R1, R14	2
Influence of foreign cultures and lifestyles of workers	R2	1
Improvement or depreciation of property value	R4	1
Project knowledge transfer to the people	R8	1
Access to project information	R13	1
Project serving its lifecycle purpose efficiently	R16	1
Open up communities and ensure continuous development	R16	1
General public		
Transparency and sharing of project information	R8, R9, R12, R15, R16	5
Improvement in livelihood and wellbeing	R1, R2, R4, R16	4
Quality/technical issues of the project deliverables	R6, R10, R12	3
Meeting national and local development agenda	R3, R7	2
Environmental problems including pollution and flooding	R5, R11	2
Project serving its lifecycle purpose efficiently	R14, R15	2
Economic growth and job opportunities	R3	1
Pedestrian and vehicular traffic situation during project development	R13	1

The "pedestrian and vehicular traffic situation during project development" was identified as a major concern of the GAs in project by four experts (Table 6.10). According to Annan (2017), the traffic congestion situation in Ghana constitutes GDP loss of about 8.21% annually. Road traffic

congestion has been ranked as the most crucial among nine common deficiencies of infrastructure development (Jones et al., 2014). Proper temporary traffic management has been recognized as a popular issue in project development (El-Gohary et al., 2006; Yang, 2014). The interviewee R12 commented in the following manner,

> *[…] The GAs ensure that the project does not cause unnecessary traffic around the site of project. Sometimes, the developers are required to provide alternative vehicular and pedestrian routes if the present routes are negatively affected.*

Additionally, two experts separately revealed that the common expectations of the GAs in projects are "capacity building for the people" and "zoning of project to fit into the area setting and layout" respectively (Table 6.10). Governments implement construction projects so as to improve the capacity of the local people. Some World Bank projects have been criticized for lacking capacity-building objective such as building organisational skills for the local people (Platteau and Gaspart, 2003). Projects should be planned and implemented to boost the capacity of the ESGs so that they could have improved lives through the development. Zoning is a strategy used by the GAs to regulate land-use restrictions by segregating diverse uses of land. The land may be segregated into residential, commercial and industrial zones. The factors considered by the GAs in producing comprehensive zoning plans comprise building density, height and purpose of project (Thekdi and Lambert, 2014). The interviewees R3, R7 and R11 stated that:

> *[…] Generally, the GAs are concerned about building the capacity of the people in communities to be able to understand the project, own the project and maintain it afterward (Interviewee R3).*

> *[…] The GAs usually have land-use concerns such as siting of commercial facilities in residential areas, and whether the zoning of the new facility fits into the layout of the area (Interviewee R7).*

> *[…] The GAs ensure that our new project fits into the land zoning restrictions. For instance, in some places in the country, we cannot build beyond a certain height due to the culture of people having uncovered bathhouses (Interviewee R11).*

Four more GA expectations/concerns were suggested by single CCs as follows: "improve the living standard of people", "meeting national and local development agenda", "involvement in project implementation" and "project serving its lifecycle purpose efficiently". Some of these factors have been discussed in CEM literature (Zeng et al., 2015; Doloi, 2012).

With regards to the ALCs, the most common expectation among the CCs is "economic growth and job opportunities" (11 CCs) (Table 6.10). The GCI provides employment opportunities for more than 900 thousand individuals and has dependent impacts on other economic sectors like finance, manufacturing and professional services (Ofosu et al., 2014). The local people see every construction project as an opportunity to make more economic benefits so that the money will remain in local hands. The development of the Bui dam project created seasonal job prospects for the local people. For instance, the women who previously were engaged in fishing started selling food and groceries in the townships (Obour et al., 2016). There is however the need to plan the sustenance of the jobs generated through projects so that the benefits will be lasting from the boom phase (WCD, 2000). Also, construction projects enhance underdeveloped communities by necessitating 'local content' in contracts (Wells and Hawkins, 2010a; 2010b), or increasing the

adoption of locally supplied substitute resources in construction project development (Almahmoud and Doloi, 2015; Chan and Lee, 2008). The interviewees R8 and R11 replied that,

> *[…] The ALCs normally will want to benefit and have direct involvement in the project by either subletting some work sections to them or by giving them assurance that the project is going to provide job opportunities for the youths. They also usually expect boost in economic activities such as selling of food and other necessities to the workforce to earn money etc (Interviewee R8).*

> *[…] A major concern of the ALCs is to get employment opportunities on the project and also boost their economic activities. For instance, I was involved in an affordable housing project where the chiefs and opinion leaders requested that about 70 percent of all working force on the project should be engaged from the community rather than bringing foreign labour (Interviewee R11).*

The next most common expectation of the ALCs is "align project with religious and cultural beliefs" (6 experts). Culture was identified as an important factor that practitioners should consider while managing stakeholders in construction projects (Yang and Shen, 2015). Culture and religious beliefs of local stakeholder communities are seen as prevalent issues in construction projects of developing countries (Ezeabasili et al., 2015). In developing countries for instance, delays in acquiring lands for PPP projects are partly attributed to religious issues and related conflicts (Babatunde et al., 2017). Usually, the local people will make requests that may not be scientifically accurate but rather makes a lot of sense in their intrinsic cultural and religious settings. For instance, the local people in Lund opposed a 60-apartment housing construction because it will possibly block the visibility of the historic twelfth-century cathedral. The concern was about the

conservation of Lund's local historic and cultural outlook (Olander and Landin, 2005). In the implementation of Kpong and Akosombo dam projects in Ghana, the local people complained about the loss of sacred places associated with their beliefs and cultures (Obour et al., 2016). The interviewee R5 affirmed this view that,

> *[…] We do experience some religious belief expectations of ALCs. For instance, there was a huge tree on the way of a road project in Town Z that could not be uprooted easily with the construction equipment available. Based on the belief and request of the people, the project team had to give the chiefs and the religious people money to do some traditional pacification of the gods before the tree was uprooted. Although such concerns do not make sense scientifically, it is our responsibility to support such religious rights with money so that the project can progress well.*

Four consulting experts separately said that "environmental issues e.g. pollution of air, sound and water bodies nearby" and "involvement of stakeholders in project development" are common expectations pursued by ALCs in projects of the GCI (Table 6.10). The ALCs are the people who are most impacted during the project implementation and in-use stages. The most devastating environmental issues faced in Ghana include water and air pollution, depletion of green zones, sanitation problems and persistent flooding of built environment (Cobbinah et al., 2017), partly due to the poor construction implementation culture. The effects of these actions may include the deterioration of the health conditions of the people living in project communities. Presently, there is call for improvement in the environmental conditions of the built environments in Ghana (Ametepey and Ansah, 2014). Moreover, the ALCs have great expectation to be involved in construction projects of Ghana. Particularly at the planning and design stages, the involvement of

ALCs will improve the project benefits accruing to them in the long run (Di Maddaloni and Davis, 2017; Buertey et al., 2016). The interviewees R14 and R6 made the following points,

> *[…] The ALCs at times raise concerns on pollutions (e.g. air, water and noise) that the project might create in their environment. For instance, in a project I was involved, the local people seriously protested against the level of noise generated by our activities in the construction site. We had to sit down with the affected individuals (neighbours) to resolve the issue accordingly (Interviewee R14).*

> *[…] Some stakeholders within the project affected communities would like to have much involvement in the project. For example, they could come to the site and look at the drawings to confirm if what we are undertaking matches with the conventional practice in the communities. If it does not, they will attempt educating us on what is practised in the community and expect us to conform (Interviewee R6).*

Also, the factors "property loss and compensation for relocation" and "improvement in livelihood and wellbeing" were suggested by 3 and 2 experts respectively as common expectations/concerns of ALCs in construction projects (Table 6.10). Construction projects could cover vast spread of lands and may require the acquisition of private lands for the common good of the society. Aside, affected people would have to be relocated because of the impact of projects on lives and adjoining properties like vibrations, poisonous fumes and erosion (Ezeabasili et al., 2015). In such situations, compensations will be made to the stakeholders who lose properties or businesses as a result of the relocation to new areas. It is the government's duty to use satisfactory methods to resettle ALCs in conditions equivalent or more than the previous experiences (Babatunde et al., 2017). However, compensation and resettlement programmes in Ghana (e.g. Bui Dam project) have faced

challenges due to the inexperience of the responsible authorities (Asiama et al., 2017). Over 88,000 people were evacuated by the development of Akosombo dam (1966) and Kpong dam (1982), and they were later relocated to new communities in Ghana (Gyau-Boakye, 2001; Tsikata, 2006; Miescher, 2012). The problems encountered in the dam construction projects included irregularities with the resettlement and compensation scheme (Obour et al., 2016). Additionally, construction project development is expected to enhance the living standards and wellbeing of the ALCs. The development of projects will upgrade the quality of community neighbourhoods with the multiplication of new facilities and services (Zhang and El-Gohary, 2016; Thekdi and Lambert, 2014). In fact, the perceived disturbance to living quality induces the collective action of ESGs against project development (Liu et al., 2018a). The upgrade in the quality and count of built environment facilities will expectedly improve the wellbeing of the people living in the project communities. The interviewees R7 and R1 stated that,

> *[…] The ALCs are concerned with resettlement issues like understanding if the project will affect their properties and farms. Also, they are interested in knowing the compensation arrangements that the developers have put in place to cater for loss of their lands and properties (Interviewee R7).*

> *[…] The ALCs always want to ensure that the project improves their lives and wellbeing (Interviewee R1).*

The "influence of foreign cultures and lifestyles of workers", "improvement or depreciation of property value", "project knowledge transfer to the people", "access to project information", "project serving its lifecycle purpose efficiently" and "open up communities and ensure continuous development" were the least common expectations of the ALCs contributed by single CCs (Table

6.10). Some of these expectations were similarly identified in projects of other construction industries across the world (Zeng et al., 2015; El-Gohary et al., 2006; Doloi, 2012).

With regards to the GP stakeholders, the most common expectation in projects of the GCI is "transparency and sharing of project information" (5 experts) (Table 6.10). The engagement of stakeholders at broader level provides legitimate basis for the compromises that are reached with the multi-stakeholders, and it improves equity and transparency considerations in project (Kaatz et al., 2005). Osei-Tutu et al. (2014) revealed that accountability is the topmost feature of an effective public procurement system in Ghana. Hence, the GP stakeholders are usually interested in how transparent the project is procured and implemented by having open access to necessary project information (Zeng et al., 2015). Most GP stakeholders will protest to show their concerns about controversies or rumours surrounding the project. The interviewees R8 and R16 confirmed that,

> *[…] The GP stakeholders are concerned about transparency in project information. For instance, if some incidence occurs on project, they expect the project team to be very open and communicate the details to the general mass of people (Interviewee R8).*

> *[…] We were engaged in a project where some of the public people wanted to have access to the contract documents and review. They always want to lay hold of project information even if it is only meant for the top management personnel (Interviewee R16).*

The next most common expectation of the GP identified by 4 CCs is "improvement in livelihood and wellbeing" (Table 6.10). The GP are more or less the end users of the project deliverables. Therefore, their wellbeing and daily livelihood will likely improve in the built environment (Zhang and El-Gohary, 2016). For instance, new commercial and industrial facilities will boost the socio-

economic value of the communities, and that will subsequently improve the lives of the general people. The interviewee R16 made know that,

> *[…] The GP stakeholders are interested in how easy they can access the facilities to help improve their social living.*

Three CCs contributed the factor "quality/technical issues of the project deliverables" as an expectation of the GP stakeholders in construction projects of Ghana (Table 6.10). The end users are interested in issues covering how well the facilities will perform technically to meet the predefined specifications i.e. the usability of the facilities. For instance, the GP stakeholders will make a case for the possible incorporation of accessibility components so that those who are incapacitated could equally use the facilities (Zhang and El-Gohary, 2016; El-Gohary et al., 2006). The interviewees R6 and R12 made the following comments:

> *[…] The GP stakeholders have an overlooking responsibility of highlighting issues that have to do with quality or concerns that are not well managed in project (Interviewee R6).*

> *[…] The GP stakeholders are usually concerned about the technical issues that pertain to the usage of the facilities (Interviewee R12).*

Furthermore, 2 CCs respectively made known "meeting national and local development agenda", "environmental problems including pollution and flooding" and "project serving its lifecycle purpose efficiently" to be common expectations of the GP stakeholders in projects. Besides, single CCs identified other GP expectations comprising "economic growth and job opportunities" and "pedestrian and vehicular traffic situation during project development" in the GCI.

6.11 OBSTACLES HINDERING THE MANAGEMENT OF EXTERNAL STAKEHOLDERS

Construction projects have not been performing well in terms of managing the numerous stakeholders (Loosemore, 2006; Rowlinson et al., 2010; Widén et al., 2014). Hence, the CCs were asked to speak on the obstacles that have been hindering the effective management of ESGs in the GCI. The results obtained through the interviews are shown in Table 6.11. As shown, the most common obstacles of ESM are "exceeding demands of the stakeholders in project" and "limited resources to manage stakeholder needs" (7 CCs respectively). The ESGs are usually numerous and their number cannot be accurately predicted in projects. The ESGs do bring concerns on board that may be unlimited and beyond the scope of project. Consequently, there will not be enough resources to meet all the demands of the ESGs in projects (Loosemore, 2006; Yu and Leung, 2015). The interviewee R8 shared the opinion below:

> *[…] Normally, the ESG demands may be extreme or unlimited, and we might not be able to meet them all. On projects, we are not able to properly assign budget cost to some of the demands made by these stakeholders. In my experience on projects for instance, the chiefs bring a list of things that they need for projects to go on in their communities despite the limited funds. However unreasonable they may be, such issues are the cultures and norms of the people. There is a local parlance that 'one does not go before the chief with empty hands'. Some projects may not have provision for some of these things in the budget− the focus is usually on the project deliverables.*

Additionally, 6 CCs asserted that "ineffective consultation of stakeholders" is a major obstacle of effective ESM in the GCI (Table 6.11). The consultation of the ESGs during the preparation and review stages of ecological assessment has the potential to facilitate the acquisition and integration

of local indigenous knowledge of Ghana (Appiah-Opoku, 2001). However, the consultation of the ESGs is generally perceived as dragging and burdensome because they are seen as enemies rather than supporters of projects (Close and Loosemore, 2014). Accordingly, some authorities even sidestep the engagement exercises with the aim of speeding up the project development (Ng et al., 2012). Often, such projects do not satisfy the needs and values of the ESGs (Olander and Landin, 2008). Buertey et al. (2016) identified inadequate consultative meeting as a major barrier of stakeholder involvement in projects of Ghana. Many backlashes resulting from the neglect of the ESGs in project development have been experienced in the GCI (Owusu, 2012). The interviewee R14 voiced out that,

Table 6.11 Major obstacles hindering ESM in construction projects

What are the major obstacles faced in managing external stakeholder groups, particularly at the construction project planning stage in Ghana?	**Interviewees (consultants)**	**Total**
Limited resources to manage stakeholder needs	R1, R2, R5, R6, R8, R14, R16	7
Exceeding demands of the stakeholders in project	R2, R6, R7, R8, R13, R15, R16	7
Ineffective consultation of stakeholders	R5, R9, R10, R12, R14, R16	6
Delays and bureaucracy in getting approvals	R3, R4, R8, R15	4
Intrinsic religious and cultural believes e.g. pacification of deities	R8, R13, R15, R16	4
Inability to cooperate with the stakeholders	R1, R12, R16	3
Ineffective communication with stakeholders	R5, R13, R16	3
Influence of stakeholders on projects due to higher powerbase	R10, R11, R16	3
Adversarial stakeholder behaviour towards project	R4, R5	2
Stakeholders having limited technical knowledge about project	R5, R13	2
Different and conflicting interests of stakeholders	R7, R15	2
Stakeholders are amorphous and not easily identifiable	R13, R16	2
Stakeholders seeking self-interest at the expense of common good	R2	1
Misinformation and misconceptions among stakeholders	R5	1
Hidden/invisible stakeholders and concerns	R8	1

[…] The representatives at the consultation exercises are sometimes unable to articulate fully the interests and expectations of the ESGs. Given the project developers, the major challenges have been with the involvement of the beneficiaries in the planning of priorities and timing, while the beneficiaries' challenges are mostly limited to the adroitness of their representatives in presenting their actual needs.

Four CCs separately found "delays and bureaucracy in getting approvals" and "intrinsic religious and cultural believes e.g. pacification of deities" as inhibitors of the management of ESGs in the GCI (Table 6.11). Ghana has an unsatisfactory record regarding the speed with which project developers could go through all the required permitting processes (World Bank, 2018; Agyemang et al., 2014). The institutions are not helping the GCI to be successful in terms project timing. Failure or delay of the institutional responsibilities towards projects encourages fraudulent practices in the GCI (Agyemang et al., 2014). Further, the demands of the ESGs that are religious and cultural in nature could be problematic to the project. In some cases, that has the potential of extending construction time and cost unnecessarily. The interviewees R3, R8, and R13 stated that,

> *[…] One major challenge faced usually in managing ESGs is the delays and bureaucracy in getting approvals and permits. As a country, we do not have that kind of seriousness in terms of speeding up the processes involved in getting approvals (Interviewee R3).*

> *[…] There may be a few situations where we have to provide financial support for the local people to perform some traditional religious rights before the project could progress. For instance, there was a project in Town A where the local people have to perform rights throughout six months to relocate the community shrine before the construction project could be executed (Interviewee R8).*

> *[…] Depending on the type of project, some ESGs could make us bear extra cost or face challenges regarding inability to use some areas of the location due to various religious and cultural beliefs. What someone may refer to as superstition is very relative based on individual religious and cultural believes. Hence, the team cannot just neglect such religious and cultural requests in project planning and implementation (Interviewee R13).*

Moreover, the "inability to cooperate with the stakeholders", "ineffective communication with stakeholders" and "influence of stakeholders on projects due to higher powerbase" were regarded separately by three CCs as obstacles of ESM in the GCI (Table 6.11). Particularly, where there are controversies surrounding project, it becomes very difficult to reach agreement with the ESGs and get their support for project development. This was the case in the XTS housing project where the public became convinced of the rumours that the project was a misplaced priority and suspicious of corruption (Owusu, 2012; Bokor, 2011; Attobrah and Otchere-Darko, 2010). Communication problems have been identified as obstruction to effective ESM in construction projects (Olander and Landin, 2008). The problems of communication include language barrier, power dynamics, gender and cultural differences, and ineffective channels of communication for ESGs (Ng et al., 2014). Although English is the formal language, Ghana has tens of spoken languages and the literacy level is not quite high. As of 2015, only about 76.6% of Ghanaian adults aged 15 or more are good with numeracy and can read and write simple statements in their everyday lives with understanding (Knoema, 2015). Therefore, inaccurate interpretation of project information into languages understood by the ESGs will make the communication process ineffective. Aside, the dynamics of the PSE enable the ESGs to amass more power by associating with powerful groups at national and international levels (Boudet and Ortolano, 2010; De Schepper et al., 2014; Olander, 2007). Political ESGs are usually challenging to manage in projects due to the exceeding power statutorily vested in them. The interviewees R1, R5, and R10 shared their perspectives that,

> *[…] Cooperation problem is one major obstacle of managing the ESGs in project. The people should understand and be in synchronization with what we are doing, otherwise, we cannot move forward. The people should know that there is some kind of benefits that will accrue to*

them at the end of the day. If we do not make them understand such benefits, then it becomes bottleneck in project (Interviewee R1).

[…] Communicating with the ESGs becomes problematic where there are no good intermediaries to speak to them in their languages and to their level of understanding. Some people may also deliberately misinform others about the project for personal interests without having the facts. In our society, a lot of people feed on rumours and speculations rather than the facts on the ground. This may be explained by the level of literacy of the general people, which makes it difficult for them to understand technical issues about the project (Interviewee R5).

[…] The political influence of ESGs affects the ability of professionals to manage them properly. The most important thing is that we have to satisfy the (formal and informal) requirements of such stakeholders, which becomes difficult at times (Interviewee R10).

The "adversarial stakeholder behaviour towards project", "stakeholders having limited technical knowledge about project", "different and conflicting interests of stakeholders" and "stakeholders are amorphous and not easily identifiable" were individually proposed by two CCs as obstacles of ESM in the GCI. Also, single CCs identified "stakeholders seeking self-interest at the expense of common good", "misinformation and misconceptions among stakeholders" and "hidden/invisible stakeholders and concerns" as additional obstacles of ESM in the GCI. Some of these factors were also mentioned in previous CEM research (Aaltonen and Sivonen, 2009; De Schepper et al., 2014; Laroche, 2003; Ng et al., 2014; Olander and Landin, 2005; Mahato and Ogunlana, 2011).

6.12 FACTORS CONTRIBUTING TO EXTERNAL STAKEHOLDER MANAGEMENT SUCCESS

The experts were requested to provide their perspectives on the factors that underline ESM success in the GCI. The factors revealed by the experts are captured in Table 6.12. The most popular SF is "communicate effectively and promptly with stakeholders" (10 experts). Jergeas et al. (2000) identified that one important area that requires improvement in the SM process is communicating effectively with the multi-stakeholders. Effective communication is linked to information exchange and building of trust among stakeholders. In order to improve communication with the ESGs, it will be important to clarify the responsibilities and roles of the stakeholders in charge from the commencement of project (Karlsen et al., 2008). This will ensure that all communications with the ESGs are passed through the appropriate channels so that feedback could be tracked easily. Communication effectiveness has been identified as a CSF of the SM process in projects (Yang et al., 2009b). Interviewee R16 said that,

> *[…] We always make sure that each ESG nominate one person to represent them in the meetings so that we can relate with them better and communicate progress appropriately. At the end of the day, it is the ESGs who are going to gain the project benefits and use the deliverables. Hence, their presence is always very good to deliver the project to maximum requirements.*

The next most common SF of ESM is to "manage stakeholders with social responsibility" (8 experts). The social responsibility includes issues on culture, economy, ecology, ethics and law that the stakeholders bring on board (Yang and Shen, 2015). The practitioners are expected to give due consideration to such issues while managing the ESGs in projects. Managing stakeholders

with social responsibility has been identified as key in both general and long-term mega construction project management (Park et al., 2017). The interviewee R7 opined that,

Table 6.12 Factors contributing to the success of ESM in projects

What are the main factors contributing to external stakeholder management success at the construction project planning stage in Ghana?	**Interviewees (consultants)**	**Total**
Communicate effectively and promptly with stakeholders	R2, R4, R5, R7, R9, R10, R12, R13, R14, R16	10
Manage stakeholders with social responsibility	R2, R4, R6, R7, R11, R12, R13, R16	8
Engage stakeholders properly in project	R4, R5, R6, R7, R8, R15, R16	7
Bring documented stakeholder concerns on board and analyse them	R5, R6, R9, R10, R13, R14, R15	7
Ensure transparency and accountability in decision-making process	R5, R8, R11, R13, R15	5
Make the stakeholders own the project and feel part of it	R2, R7, R14, R16	4
Extensively identify the stakeholders in project early	R5, R6, R15, R16	4
Clarify the project plans and objectives to stakeholders	R7, R9, R13, R14	4
Managers must be adroit and experienced in managing stakeholders	R1, R9, R11	3
Ensure continuity and respect in relationship with stakeholders	R5, R14, R16	3
Adequate resource provision to manage stakeholders	R3, R11	2
Obtain support from higher authority to manage stakeholders	R3, R11	2
Strategies should be well-planned and applied timely	R4	1
Elicit regular feedback information from stakeholders	R15	1

> *[…] Many ESGs come up with cultural, social and environmental issues in projects. It is our prior duty to ensure that all these issues are well managed. However, if we fail to manage these issues in project, the project could be deemed as unsuccessful since the ESGs are more often the recipients of the project outcomes.*

Seven experts each acknowledged that "engage stakeholders properly in project" and "bring documented stakeholder concerns on board and analyse them" are critical factors to realise ESM success in the GCI (Table 6.12). Fung (2015) affirmed that participation of stakeholders in project advances legitimacy, fairness and effectiveness of project implementation. However, it is argued that conflicting interests and expectations among multi-stakeholders are a big issue experienced during public participation to manage NIMBYism (Yung and Chan, 2011). Engagement exercises should be properly conducted to avoid the potential of rather causing conflicts in projects (Sun et

al., 2016). Also, engagement exercises should span across successive stages of project so that the participants could focus on specific aspects of project at a time and reach mutually beneficial decisions and solutions (Ng et al., 2016). Meetings, workshops, door knocks, surveys and forums are some of the applicable approaches for engaging ESGs in projects of the GCI (El-Gohary et al., 2006).

The ESGs do pursue diverse expectations in the construction development process. It is expedient for the responsible practitioners to consider and fulfil such ESG expectations to accrue satisfaction for them (Chan and Oppong, 2017). The prior duty of the practitioners will be to elicit such expectations and needs of the ESGs using preferred engagement methods (Yang et al., 2011b). Ng et al. (2016) advocated for the proper documentation of the interactions that practitioners have with the participants during engagement processes. Proper documentation of the ESG expectations and requirements will ensure that changes are appropriately monitored, tracked and managed in project development (Kamara, 2017). The analysis process helps practitioners to recognize ESGs and their expectations, assess the influence capacities of the ESGs, and analyse ESG relationships in the PSE. Some stakeholder analysis methods include power/interest matrix, SNA, and Stakeholder Circle™, having complementary benefits (Yang et al., 2011b; Bourne, 2005). The stakeholder analysis process guides the practitioners to devise and implement right strategies on the ESGs so that project will become mutually beneficial. The interviewees R5, R6 and R9 had these to say,

> *[…] Most of the times, it is about identifying the ESGs, consulting them, and bringing their concerns on board. Practitioners should respect their concerns as much as possible, take them on board and address them. When these are done, the ESGs feel that you have recognized them as important members and given them the due respect in the project (Interviewee R5).*

[…] The best approach is to always identify all the ESGs at the onset. Also, we engage all of them properly and document all their issues. It is likely that new concerns may show up while the project progresses. However, since we have identified them from the beginning, we may be able to manage their needs well (Interviewee R6).

[…] The project should be well sold out to the ESGs before execution. Team leaders should be able to bring ESGs together and manage them, motivate them to attend meetings and be on board, and build consensus. It is needful to introduce the project to the ESGs and bring them on board as early as possible. Besides, documentation of all interactions with ESGs should be encouraged to ensure proper referencing and management of issues (Interviewee R9).

Furthermore, five CCs stated that "ensure transparency and accountability in decision-making process" is a key duty of the project team in guaranteeing that the ESGs are managed effectively in project (Table 6.12). In instances like forums, it is hard for the numerous ESGs to understand how their views and expectations have been considered in the project. The access that ESGs have to project information and the transparency in decision-making are necessary for the success of stakeholder engagement exercises (Ng et al., 2016). Projects that are delivered on the basis of benefits realization are found to impact project success extensively. Involving the ESGs serves as a platform to manage the benefits accruing to the ESGs by reducing project misjudgements during planning and improving transparency and answerability in the mutual decision-making process (Di Maddaloni and Davis, 2017). Through project case studies, transparency was found to be significant in managing multi-stakeholders (Huemann et al., 2016). In the XTS housing project, the stakeholders perceived that some of their expectations were ignored deliberately and project decisions were made without necessary transparency. This situation forced the ESGs to oppose the

implementation of the project until it was abolished (Owusu, 2012). Therefore, the perception of transparency and accountability in project could alleviate controversies and rumours, and equally improve ESG satisfaction in project. The interviewee R11 opined that,

> *[…] We should be ready to fulfil the requests of ESGs as much as possible in projects. However, if all the requests cannot be fulfilled, we have to be frank enough, face the ESGs and explain to them the reasons why we cannot meet certain requests. For instance, if the ESGs make requests that do not conform to the standards or professional ethics in projects, we should stand firm and let them know it is not possible to fulfil.*

Additionally, 4 CCs separately proposed that the ESM process could be successful by considering the following actions: "make the stakeholders own the project and feel part of it", "extensively identify the stakeholders in project early" and "clarify the project plans and objectives to stakeholders" (Table 6.12). Arguably, multi-stakeholders who are engaged tend to develop a positive attitude and ownership leading to their empowerment in projects (Eschenbach and Eschenbach, 1996; Collinge and Harty, 2014). It is vital to design projects in a way that instils ownership pride in the receiving stakeholder communities and users. This can be achieved through actions such as preserving and restoring natural habitats of biodiversity (Valdes-Vasquez and Klotz, 2012). Aside, although there is the potential of missing out on a lot of ESGs during the early project stages (Bourne and Walker, 2006), practitioners must make the conscious effort to identify a comprehensive list of stakeholders in project. At times, practitioners could depend on their experience/intuition to produce a generic list of ESGs found in previous similar projects (Yang et al., 2011b). Proper identification of stakeholders was seen as an essential element of the SM process in construction (Park et al., 2017). Moreover, the project team should introduce the proposed project to the ESGs with the aim of them understanding the project context and scope

properly. This will partially determine the types of expectations and needs that the ESGs will bring aboard the project. Clarification of the project mission and objectives has been similarly adopted as strategy for effective SM in diverse construction projects (Yang and Shen, 2015; Nwachukwu et al., 2017). The interviewees R14 and R15 had the following respective points to make:

> *[…] It will be important for the project team to educate the ESGs well on the scope and objectives of the project. Also, we have to acknowledge the ESGs and make them become part of the project. We have to consider partially but not wholly, their ideas and suggestions about the project. When we listen to the ideas of the ESGs, which might not necessarily be substantial or concrete, they will feel part of the project and give us the desired buy-in. We should not see ourselves different from them in terms of culture as that could affect the relationships we build with them (Interviewee R14).*

> *[…] The critical success factors for managing the ESGs well include ensuring that all who matter are properly and timely identified in project (Interviewee R15).*

From the same Table 6.12, 3 experts separately mentioned "managers must be adroit and experienced in managing stakeholders" and "ensure continuity and respect in relationship with stakeholders"; 2 experts separately stated "adequate resource provision to manage stakeholders" and "obtain support from higher authority to manage stakeholders"; and single experts contributed "strategies should be well-planned and applied timely" and "elicit regular feedback information from stakeholders" as factors leading to ESM success in the GCI. All these factors have been mentioned in previous CEM research as critical activities and requirements for managing construction stakeholders successfully (Park et al., 2017; Yang et al., 2010; Molwus et al., 2017; Yang and Shen, 2015; Nwachukwu et al., 2017).

6.13 OTHER EXPERIENCES OF EXTERNAL STAKEHOLDER MANAGEMENT IN GHANA

Concluding, the experts were given the opportunity to express other experiences about ESM which were not covered in the interview guide. Five of the experts contributed their experiences and made useful recommendations to drive the management of ESGs in construction projects of Ghana.

First, the interviewee R3 was concerned about improving ESM at the broad industry level rather than focusing on just a particular project. The interviewee R3 thinks that industrial stakeholders should focus attention on developing generic best practices in ESM that could be adopted in construction projects. The interviewee R3 admitted that,

> *[…] As a country, we have not placed much emphasis on the need to get the management of stakeholders coordinated properly to culminate into success. We have not yet put such ESGs into a committed structure that would allow us to observe the procedures to make sure that we work within time and quality. It will be very key for us to look at it in a holistic manner to make sure that these are the good practices required to achieve SM and project success.*

Second, the interviewee R5 highlighted the shoddy engagement exercises conducted by professionals in project development. Instead of professionals engaging the ESGs effectively to generate mutually beneficial solutions, the design attention rather focuses on solving technical problems. This observation is similar to Olander and Landin (2008) who argued that construction projects are designed for monetary and technical reasons, and do not suffice the expectations and values of the ESGs who are the eventual recipients. Besides, some professionals see the ESGs rather as enemies who will delay the project progress unnecessarily (Close and Loosemore, 2014). The interviewee R5 confirmed that,

> *[…] ESM is an area that is often forgotten by the professionals because the focus is more on the technical aspects about how the project is going to work on the ground and how to meet the requirements of the GAs. We do not usually pay much attention to the other ESGs who indirectly are important for the project. For instance, there was not much engagement of the ESGs around the X Interchange project. Despite the priority of helping ease the traffic situation, some people were still asking if it was the most critical priority. Additionally, if we assess the design of the project, people are still complaining about the drainage and flooding situation persistent there. The people who were occupying there before construction (e.g. traders, passengers, transport operators etc.) knew about the problem and so, by engaging them well, the designs could have been improved to solve the flooding problem presently faced there. The implication is that the professionals did some technical assessment without adequately engaging the ESGs there to improve the situation. Also, the project could have been motivated more by political reasons rather than solving societal problems. Another problem observed is that the project has created unnecessary traffic on some of the lanes due to several traffic lights (stops) on the lanes, which were not planned so before the construction.*

Third, the interviewee R14 lamented on the poor attention given to ESM in construction projects of Ghana. The interviewee R14 said that,

> *[…] In my privileged experience, I observed that ESGs are not fully consulted at the PS. In most cases, prototype structures have been provided without allowing the stakeholders any modification or alteration to suit their peculiar circumstances.*

Finally, the interviewees R15 and R16 stressed on the need for professionals to be conscious of the fact that neglecting to manage the ESGs will lead to project failure. Contrarily, managing the ESGs properly in project will potentially lead to success of project. They commented that,

> *[…] It is important to appreciate that problems will arise if relevant ESGs are not sampled and engaged from the PS of projects (Interviewee R15).*

> *[…] If we involve the ESGs well, it will lead to the success of project, and if we ignore them, we will eventually face a lot of problems in the project. It is important to acknowledge that the ESGs are more or less the beneficiaries of the project. So, professionals should try their best to accommodate the ESGs, let them understand the project well, and cooperate with them to ensure project success (Interviewee R16).*

6.14 CHAPTER SUMMARY

This chapter elaborated on the outcomes of the interviews conducted on 16 consulting experts in the GCI. Twelve questions covering the present practices of ESM in the GCI were asked the interviewees. The questions covered areas such as comparison among the three ESGs in terms of the most difficult to manage; how the stakeholders are identified and engaged in projects; how their needs and expectations are prioritized; the objectives and indications of effective ESM; the major concern/expectation areas of the three ESGs; the obstacles hindering the management of the ESGs; and the strategies and factors contributing to successful ESM. The findings reveal detailed understanding of the practices adopted by the practitioners in the GCI for managing ESGs who are historically not considered much in projects. In Chapter 7, the survey findings on the ESG expectations, and obstacles and CSFs of the ESM process in the GCI are examined.

CHAPTER 7 EXTERNAL STAKEHOLDER GROUP EXPECTATIONS, AND OBSTACLES AND CRITICAL SUCCESS FACTORS OF EXTERNAL STAKEHOLDER MANAGEMENT [2]

7.0 INTRODUCTION

In this chapter, the findings of ordinary questionnaire survey conducted on CCs in Ghana are presented. The survey questionnaire was on the key objectives of the study; major expectations of the ESGs, the obstacles inhibiting effective ESM, and the CSFs for ESM in construction projects of Ghana. The findings presented in this chapter adds to the knowledge from Chapter 6 on the present practices of ESM in the GCI.

7.1 ORDINARY QUESTIONNAIRE SURVEY

An empirical questionnaire survey was carried out with the identified general CCs in the GCI from April to August 2017. Based on their latest experiences, the CCs from different organisations were requested to score the questions on 5-point Likert scales corresponding to three main attributes of ESM in the GCI (i.e. ESG expectations, obstacles and CSFs) (Appendix I). Non-random sampling approaches (purposive and snowballing) were adopted to identify the respondents as described in

[2] This chapter is partly based upon:

Oppong, G.D. & Chan, A.P.C. (2019). "Expectations that external stakeholders pursue in construction projects of developing countries". *Proceedings of Postgraduate Conference on Interdisciplinary Learning*, 29-30 March, Lingnan University, Hong Kong.

Oppong, G.D., Chan, A.P.C. & Abidoye, R.B. (2019). "Factors hindering external stakeholder management in construction projects of developing countries: Case study of Ghana". *Proceedings of CIB World Building Congress*, 17-21 June, The Hong Kong Polytechnic University, Hong Kong.

Oppong, G.D. & Chan, A.P.C. (2018). "External stakeholder management performance attributes in construction projects: An empirical study". *The Hong Kong Polytechnic University CIB Student Chapter Academic Exchange Programme*, 8-10 October, The University of Tokyo, Japan.

the methodology (Section 2.4.2.3). Overall, the questionnaires were distributed to 263 CCs by hand delivery personally (majority of distribution) and through email, as preferred by the respondents in the GCI. A total of 105 dully filled questionnaires were returned to the researcher over the period. The response rate for this study was therefore approximately 40%. This response rate is adequate given that most CEM researches were conducted with the 20−30% survey response rate norm (Akintoye, 2000). The sample of 105 CCs is also satisfactory for analysis where comparison is drawn with other similar CEM researches like Tang and Shen (2013) with 122 responses, El-Sawalhi and Hammad (2015) with 67 responses, and Leung et al. (2013b) with 57 responses.

The demographic features of the CCs are shown in Table 7.1. It is observable that more of the CCs have substantial experiences in building and public projects. Particularly for the nature of project, although the responses are biased towards building schemes, the ratio is closely comparable to the similar work of Yang and Shen (2015). The scholars were able to generalise their findings because of the universal SM issues incorporated in the framework. Equally in this study, the issues covered and findings are quite universal and believed to be not so much dependent on the specific nature of project. Besides, the three ESGs investigated are common to both building and civil schemes, and therefore, applying fairly generic management approach will be suitable.

The responses also show quite balanced distribution among the four professional divisions in the GCI. Besides, majority of the responses were received from CCs who occupied identical roles of "Project (Construction) Manager/Engineer/Architect/Quantity Surveyor" (54.3%) in various organisations. Further, the authenticity and richness of the study's findings derive from the high level of experience of greater portion of the respondents. Thus, about 63% of the CCs had 6 years

or more cumulative experiences in managing, engaging or relating with the ESGs in construction projects developments of Ghana.

Table 7.1 Profile of respondents

Respondent characteristics	No.	Percentage	Respondent characteristics	No.	Percentage
Sector of client of project			*Nature of project*		
Public	47	44.8	Building	66	62.9
Private	36	34.3	Civil	39	37.1
Both	22	20.9	Total	105	100
Total	105	100	*Level of related experience*		
Professional background			1-5 years	39	37.1
Engineer	26	24.8	6-10 years	38	36.2
Quantity Surveyor	33	31.4	11-15 years	12	11.4
Architect	33	31.4	16-20 years	13	12.4
Project/Construction Manager	13	12.4	Above 20 years	3	2.9
Total	105	100	Total	105	100
Position in organisation					
Assistant Project (Construction) Manager/Engineer/Architect/Quantity Surveyor				12	11.4
Project (Construction) Manager/Engineer/Architect/Quantity Surveyor				57	54.3
Senior Project (Construction) Manager/Engineer/Architect/ Quantity Surveyor				27	25.7
Director/CEO				9	8.6
Total				105	100

7.2 PRACTICE OF EXTERNAL STAKEHOLDER MANAGEMENT IN GHANA

In Section B of the questionnaire, the CCs were given instruction to score the extent to which ESM is practised in construction projects on a 5-point Likert scale ranging from 1= "poorly" to 5= "excellently". The result (mean= 3.07) indicates that ESM is practised averagely by practitioners in construction project delivery. This supports the notion that SM has poor record in developing countries due to the stern opposition of projects by the ESGs (Rwelamila et al., 2015).

The respondents were also requested to describe the nature of their ESM practices in the GCI. Only 32.4% of the CCs claimed that they use established and documented procedure for managing ESGs formally in construction projects. Aside, 14.3% of the respondents indicated that even

though they follow an established procedure in managing the ESGs in construction projects, the procedure is not well-documented but rather in their minds. Further, a large portion of the CCs (53.3%) were of the view that they do not follow any specific documented or intuitive procedure in managing the ESGs in construction projects. Nevertheless, the practitioners manage the ESGs uniquely in construction projects as may be appropriate in each case. The results are in line with Yang (2010) who found out that practitioners in Hong Kong do not usually use an established procedure to manage construction stakeholders in a formal way. The results further confirm the arguments that SM is not practised appropriately in construction projects when juxtaposed with other industries (Loosemore, 2006); the present SM approach is practised randomly by practitioners (Karlsen, 2002); and there is the need for a systematic and formal approach for SM in construction project development (Yang et al., 2009a; Mok et al., 2015).

7.3 ATTRIBUTES OF EXTERNAL STAKEHOLDER GROUPS IN PROJECTS

In Section C of the ordinary questionnaire (Appendix I), the CCs were instructed to score on a 5-point Likert scale (1= “least important” to 5= “most important”) the extent to which they believe that the three attributes (interests/expectations in project, commitment to project, and constraints about project) apply to each of the ESGs in construction projects of Ghana. The outcomes of the descriptive analysis are revealed in Table 7.2. In terms of the three attributes, the GAs are the most important or crucial for construction project success with mean scores of 4.48, 4.56 and 4.71 for their interests/expectations in projects, commitment to project, and constraints about project respectively. A possible explanation is that the GAs have statutory roles to play in project development. They are responsible for regulating development and providing all legal and technical approvals for projects to be undertaken in the built environment. Therefore, they can highly delay or expedite projects in the GCI (Chan and Oppong, 2017). Ghana is recognized for

long durations involved in pursuing legal permits to undertake projects in the built environment (World Bank, 2018). The challenges involved, lack of transparency and falling applicant confidence promote evasion, false agents, and fraudulent practices in the permitting process of Ghana (Agyemang et al., 2014). In Ghana, demolition of ongoing projects is seen as a rational penalty for the evasion of the permitting process or construction of substandard projects. Thus, when the GAs realise that developers have not gone through the permitting process prior to construction, they may instruct the stoppage of projects or even demolish them altogether (Hammah and Ibrahim, 2014). Therefore, the GAs' interests/expectations, commitment and constraints about project are paramount issues that should be considered in GCI projects.

Table 7.2 Attributes of the ESGs in projects

	Attributes of external stakeholder groups								
	Interests/expectations			**Commitment to project**			**Constraints about project**		
External stakeholder group	**Mean**	**SD**	**Rank**	**Mean**	**SD**	**Rank**	**Mean**	**SD**	**Rank**
Governmental Authorities	4.48	0.61	1	4.56	0.55	1	4.71	0.47	1
Affected Local Communities	4.46	0.62	2	4.39	0.66	2	4.36	0.62	2
General Public	3.83	0.75	3	3.86	0.87	3	3.69	0.82	3

The ALCs also ranked 2nd with mean scores of 4.46, 4.39 and 4.36 for their interests/expectations project, commitment to the project, and constraints about project respectively. The ALCs are the stakeholders who are most impacted by the project development. Some of these stakeholders have to sacrifice their properties and relocate due to the development of projects in the common interest of the people (Li et al., 2013; 2016). Failure to cooperate with this ALCs could lead to disastrous outcomes as they will use both formal and informal approaches to oppose projects (Sun et al., 2016; van den Ende and van Marrewijk, 2019). The approaches may include picketing, sabotage, media attacks, and vandalism, which may require good relational and communication skills of

practitioners to resolve. The traditional leadership in the communities are perceived as powerful institutions due to their recognized and entrenched governance roles in the constitution of Ghana (Ubink, 2008; Dansoh et al., 2019). Governments can only succeed in socio-economic development project and policy implementation when they cooperate with the traditional authorities (ECA, 2007; Arimoro, 2015). However, there are challenges dealing with them due to the move by governments to minimize the roles of the traditional authorities in governance and politics of Ghana (Ubink, 2008). Besides, the issues of religious beliefs and cultural values are becoming much talked about in construction project development (Ezeabasili et al., 2015). Hence, the interests/expectations, commitment and constraints of the ALCs should be equally considered in projects for successful delivery.

The least important ESG based on the mean values of the attributes is the GP stakeholders. They obtained mean scores of 3.83, 3.86 and 3.69 for their interests/expectations in project, commitment to project, and constraints about project respectively. The GP stakeholders are important in projects as they could pursue politically motivated social, ecological and economic interests/expectations by means of pressure groups to improve their saliency and receive attention from the responsible practitioners in projects (Mahon et al., 2004). Besides, the end users of the deliverables ought to be paramount in projects to make project successful even during the in-use stage.

7.4 COMPARISON OF EXTERNAL STAKEHOLDER GROUP EXPECTATIONS IN PROJECT

It was believed that the various expectations and concerns in projects varied among the ESGs. This belief could be substantiated from the works of Li et al. (2012a; 2013) where different concerns were compared among four ESGs in large construction and infrastructure projects of Hong Kong.

Hence, the CCs were instructed to rate the degree to which they agree/disagree that the expectations are pursued by each ESG in project development of Ghana.

The expectations of the ESGs were analysed using mean scores, one-sample and paired-sample t-tests, and Spearman's (*r*) test. First, the mean computations were used to rank the agreement/disagreement levels of the ESG expectations in construction projects. Second, the one-sample t-test was engaged to compare the mean scores of ESG expectations with the mean value of the five-point scale (i.e. 3.00). Third, the paired-sample t-test was adopted to test whether the mean scores of the expectations between pairs of ESGs were statistically different. The t-tests were conducted based on the null hypothesis that "no statistically significant differences exist between the mean scores of the expectations of ESG parings". Finally, Spearman's (*r*) measures the correlation (agreement) between the rank order of the expectations of ESG parings (Hwang et al., 2017). The computation does not take into consideration the equal variance or normality assumption of data but rather, the focus is on the rank order differences of the means of expectations (Hwang et al., 2015). All these tests were performed at 5% level of statistical significance.

7.4.1 Consistency and Reliability of Responses

Prior to the comparison of expectations among the ESGs, the analyses of the consistency and reliability of the responses were conducted. Table 7.3 presents the analysis results of the Kendall's (*W*) at 5% significance test value. The Kendall's (*W*) values obtained for GAs, ALCs and GP stakeholders are 0.179, 0.272 and 0.290 respectively. The Kendall's (*W*) values for the ESG expectations are small because of the large number of expectations (more than 7) in a single computation (Siegel and Castellan, 1988). Considering the degree of freedom of the expectations (23), the critical value from the chi-square table is 35.172. Moreover, the computations resulted in

chi-square values of 432.214, 657.449 and 701.123 for GAs, ALCs and GP stakeholders respectively, which were significant at 0.05 level. Hence, it can be deduced that the CCs generally agreed on the ratings of the expectations of the ESGs.

The Cronbach's alpha reliability test also resulted in values of 0.901, 0.871, and 0.884 for the 24 expectations of the GAs, ALCs and GP stakeholders respectively (Table 7.3). Since all the Cronbach's alpha values are more than 0.70, it implies that the scale of questionnaire is reliable, and the practitioners' responses are consistent and suitable for analysis (Nunnally, 1978).

Table 7.3 Kendall's (*W*) and reliability results on ESG expectations

Variable	Governmental authorities	Affected local communities	General public
Kendall's (*W*)	0.179	0.272	0.290
Chi-square	432.214	657.449	701.123
Degree of freedom (df)	23	23	23
Critical value of chi-square	35.172	35.172	35.172
Asymp. Sig.	0.000	0.000	0.000
Cronbach's alpha reliability test	0.901	0.871	0.884

7.4.2 Comparison of Expectations Between Governmental Authorities and General Public

The results of the comparison analysis between the GAs and GP stakeholders on their expectations and concerns in projects are captured in Table 7.4. The outcomes of the one-sample t-test show that except for "enhance indigenous people's spiritual connection with land" (E6), the means of all the other 23 expectations are statistically unlike the test mean value of 3.00 for both GAs and GP stakeholders in Ghana. A possible explanation may be that the expectation E6 is more appropriate for the ALCs in project development of Ghana (Teo, 2009; Ezeabasili et al., 2015). On the other hand, the GAs and GP stakeholders significantly pursue the 23 expectations in project development of Ghana as all mean values are higher than 3.00.

Table 7.4 Comparison of expectations between GAs and the GP stakeholders

		Governmental authorities			General public					
S/N	**Expectations of ESGs**	**M**	**Rk**	***P(o)***	**M**	**Rk**	***P(o)***	**Diff.**	**SD**	***P(p)***
E1	Economic growth and employment generation	4.48	2	**0.00**	4.35	4	**0.00**	0.12	0.73	0.09
E2	Green/sustainable development and energy conservation	3.39	22	**0.00**	3.25	20	**0.01**	0.14	1.04	0.16
E3	Safety management and security	3.65	11	**0.00**	3.23	22	**0.02**	0.42	1.04	**0.00**
E4	Proper traffic management during project development	3.91	7	**0.00**	3.62	11	**0.00**	0.30	1.12	**0.01**
E5	Incorporating accessibility facilities for the disabled groups	3.58	15	**0.00**	3.43	15	**0.00**	0.15	1.14	0.17
E6	Enhance indigenous people's spiritual connection with land	3.10	24	0.36	3.12	24	0.23	-0.03	1.06	0.78
E7	Preservation of biodiversity and natural resources	3.55	17	**0.00**	3.66	10	**0.00**	-0.10	1.42	0.45
E8	Improve neighbourhood quality and stakeholder wellbeing	3.70	9	**0.00**	4.55	3	**0.00**	-0.86	0.96	**0.00**
E9	Transparency, and fulfilling regulations and standards	4.52	1	**0.00**	3.39	17	**0.00**	1.13	1.08	**0.00**
E10	Tourism attractiveness, and showcasing national identity and international reputation	3.67	10	**0.00**	3.37	18	**0.00**	0.30	1.06	**0.01**
E11	Accessing and democratic sharing of project information	3.60	14	**0.00**	3.20	23	**0.04**	0.40	1.40	**0.00**
E12	Prevention of pollution, flooding and erosion	4.00	6	**0.00**	4.07	6	**0.00**	-0.07	0.85	0.42
E13	Appropriate compensation and relocation plan/strategy	4.23	4	**0.00**	3.75	8	**0.00**	0.48	1.06	**0.00**
E14	Increased use of substitute local resources e.g. materials	3.75	8	**0.00**	3.46	14	**0.00**	0.30	1.06	**0.01**
E15	Promotion of intergenerational equity	3.37	23	**0.00**	3.25	20	**0.01**	0.12	0.96	0.19
E16	Access to social/welfare facilities and location of multi-activities	4.34	3	**0.00**	4.18	5	**0.00**	0.16	0.82	**0.05**
E17	Promotion of community cohesion and social equity	3.52	18	**0.00**	4.58	2	**0.00**	-1.06	1.05	**0.00**
E18	Environmental health and comfort e.g. interior hygiene	4.04	5	**0.00**	3.59	12	**0.00**	0.45	1.04	**0.00**
E19	Functionality and charges affordability to users	3.62	13	**0.00**	4.71	1	**0.00**	-1.10	1.14	**0.00**
E20	Harmonization of project with local natural setting	3.57	16	**0.00**	3.35	19	**0.00**	0.22	1.00	**0.03**
E21	Adaptability of development to changing societal needs	3.63	12	**0.00**	3.58	13	**0.00**	0.05	0.97	0.62
E22	Technical design e.g. aesthetics, visual permeability etc.	3.50	20	**0.00**	3.85	7	**0.00**	-0.34	1.13	**0.00**
E23	Involvement of stakeholders in design and planning process	3.50	20	**0.00**	3.42	16	**0.00**	0.09	0.99	0.38
E24	Conserving local cultural and historic heritage	3.51	19	**0.00**	3.70	9	**0.00**	-0.19	1.10	0.08
	Total			***23***			***23***			***14***

Note: M = mean; Rk = rank; *P(o)* = one sample t-test *p*-value; *P(p)* = paired t-test *p*-value; Diff. = mean difference; SD = standard deviation. The Spearman's (*r*) between GAs and GP is 0.368 with p- value of 0.077.

From the results of the mean values, the top expectations of the GAs in projects are as follows: "transparency, and fulfilling regulations and standards" (4.52), "economic growth and employment generation" (4.48), "access to social/welfare facilities and location of multi-activities" (4.34), "appropriate compensation and relocation plan/strategy" (4.23), "environmental health and comfort e.g. interior hygiene" (4.04), and "prevention of pollution, flooding and erosion" (4.00). It is not surprising that the GAs are concerned about projects fulfilling legal requirements and becoming more transparent to the citizens. This is because construction projects are advancing greatly in inclusivity of citizens for project delivery (Newcombe, 2003), and it is manifest in the increasing adoption of stakeholder engagement exercises in project developments of Ghana (Eyiah-Botwe et al., 2016).

Additionally, the government of Ghana is very concerned about how construction projects would provide job opportunities for the citizens and also improve the national GDP. The GCI presently contributes about 14.2% to the national GDP (Defor, 2018), and the labour-intensive nature allows the employment of large workforce through the corporate effort of more than 23,000 registered contractors (Ministry of Education, 2010). In 2013, despite the low growth rate of Ghana's economy (5.4%), the GCI still contributed about 8.4% to the national GDP (ISSER, 2015). Besides, the demand for cement enlarged from 4.8 to 5.5 million metric tonnes between 2010 and 2012 (Sutton and Kpentey, 2012). Hence, the GCI is a critical sector of the economy of Ghana by means of its magnitude and as a driver of economic growth (Darko and Löwe, 2016; Owoo and Lambon-Quayefio, 2018).

The GAs further expect construction projects to house social and welfare facilities to accomplish the needs of users (Li et al., 2012a). Moreover, the GAs are expected to develop good resettlement and compensation plans for those who are adversely affected by projects to the extent that they

have to vacate properties and lands for the common good of recipient society (Li et al., 2013; 2016). For instance, a lot of problems were encountered with regards to the compensation and relocation of stakeholders affected by the redevelopment of the Kumasi Central Market and the development of the Bui Dam project in Ghana because the responsible GAs did not administer the process properly (Asante, 2017; Asiama et al., 2017; Obour et al., 2016). In line with ecological expectations, the GAs are also interested in the health and comfort of the facilities, and issues such as pollution, erosion and flooding due to the construction process (Zeng et al., 2015; Hill and Bowen, 1997). The environmental problems facing project development in Ghana have been highlighted in studies (Korah and Cobbinah, 2017; Quagraine, 2011; Cobbinah and Darkwah, 2017). The EPA was established by the Ghana government to help regulate sustainable practices regarding the development of the built environment.

From the same Table 7.4, the top expectations of the GP stakeholders according to the mean scores are following: "functionality and charges affordability to users" (4.71), "promotion of community cohesion and social equity" (4.58), "improve neighbourhood quality and stakeholder wellbeing" (4.55), "economic growth and employment generation" (4.35), "access to social/welfare facilities and location of multi-activities" (4.18), and "prevention of pollution, flooding and erosion" (4.07). The end users are generally concerned about how well the facilities delivered will function to requirements and how much they need to pay to make use of the facilities during the in-use stage (Mostafa and El-Gohary, 2015; Li et al., 2013). The maintenance culture of Ghana is generally known to be poor (van der Geest and Obirih-Opareh, 2002). This is evinced in the bad and deteriorating conditions of buildings and construction facilities in the country. Moreover, there are records of the GP stakeholders negotiating or fighting with the regulatory authorities about the

high user fees or cost of infrastructure and building projects in Ghana and similar developing nations (Arimoro, 2015; Attobrah and Otchere-Darko, 2010).

In the course of construction project development, the GP stakeholders have the opportunity to participate and cooperate with other stakeholders. Many times, it is during the engagement exercises that the stakeholders interact with one another in the project, and build relationships and cohesion (Teo, 2009; Leung et al., 2012). Besides, the common usage of the facilities serves as an avenue to promote stakeholder cohesion. For instance, the development of transportation networks such as railways and roads could inspire the sense of belongingness among the user stakeholders. The interconnections made with other stakeholders while riding in communal transportation modes foster cohesion and sense of belongingness (Mostafa and El-Gohary, 2015). The cohesion of multi-stakeholders is built through the eventual network of social relationships existing among them in the project. In terms of social equity, different stakeholder statuses or groups are supposed to be recognized and given due consideration in project development (Almahmoud and Doloi, 2015; Feige et al., 2011). For instance, in railway transport mode development, spaces should be created for users having different statuses in society.

The development of built environment projects like roads, railways and buildings will help modernize neighbourhoods and the associated wellbeing of the users (Zhang and El-Gohary, 2016). Thus, people can have access to new facilities and services like health centres, schools and social centres for relaxation. It has been argued that investments in urbanization, infrastructure and economic activities have corporately facelifted Ghanaian towns and affected the urban life quality of people (Adarkwa, 2012). Aside, the GP stakeholders are concerned about possible employment opportunities on the projects (Chan and Lee, 2008; Ravesteijn et al., 2014). In line with the Persons with Disability Act, 2006 (ACT 715), a legislative bill was proposed to ensure that about 50% of

job opportunities at toll booths on highways are made available specifically for people with disability in Ghana (Amoako-Atta, 2017). Further, the GP stakeholders are interested in project environmental issues related to pollution, flooding and erosion. Environmental pressure groups do oppose projects that have potential to affect the environment negatively (Li et al., 2012a). In the MWDP, the Wildlife Fund Thailand and Sueb Nakhasathien Foundation together opposed the development because of foreseen dangerous impacts on the environment.

The computed Spearman's rank correlation shows that the value of 0.368 was insignificant ($p > 0.05$). The results show that the expectations of the GAs do not have a significant strong correlation with the expectations of the GP stakeholders in construction projects of Ghana. Thus, the GAs and GP stakeholders pursue quite different expectations in construction projects in terms of the importance levels (i.e. rank order). However, the outcomes of the paired-sample t-test indicate that 14 expectations are statistically significant ($p < 0.05$). Accordingly, the null hypothesis that no significant difference exists between the GAs and GP stakeholders regarding the 14 expectations ought to be rejected. The significant differences occurring between the expectations of the GAs and GP stakeholders are emphasized in the mean differences results. The expectations with the highest mean differences between the GAs and GP stakeholder are as follows: "transparency, and fulfilling regulations and standards" (Diff. = 1.13), "functionality and charges affordability to users" (Diff. = -1.10), "promotion of community cohesion and social equity" (Diff. = -1.06), and "improve neighbourhood quality and stakeholder wellbeing" (Diff. = -0.86). These expectations have mean difference greater than or equal ± 0.50 between the GAs and GP stakeholders. As such, practitioners should consider the expectations with higher mean difference when ensuring equity between the GAs and the GP stakeholders in the GCI project development.

As discussed just above, the expectations El, E12, E13 and E16 manifestly rank high for both the GAs and GP stakeholders in project. This situation could be explained by the socio-political contexts within which projects are planned and implemented (Boutilier and Zdziarski, 2017). There has been increasing internal and external pressure on projects to fulfil social and environmental responsibilities towards all stakeholders (Aaltonen, 2011; Barreiro-Deymonnaz, 2013). Hence, ESGs' expectations should expectedly be incorporated into project decisions to achieve success (IFC, 2007). Given the prevailing socio-political pressures, the government is equally concerned about and making efforts for such expectations of the public to be enforced in projects through the permitting and licensing processes.

7.4.3 Comparison of Expectations Between Governmental Authorities and Affected Local Communities

Comparative analysis was conducted between the GAs and ALCs on their expectations in construction project development and the results are shown in Table 7.5. The one sample t-test indicates that "green/sustainable development and energy conservation" is the only expectation of the ALCs that is not statistically different from the test mean value (3.00). As such, the other 23 expectations are significantly pursued by ALCs in construction projects of Ghana. All the 23 expectations had mean scores greater than 3.00.

Table 7.5 Comparison of expectations between GAs and ALCs

		Governmental authorities			**Affected local communities**					
S/N	**Expectations of external stakeholders**	**M**	**Rk**	***P(o)***	**Mn**	**Rk**	***P(o)***	**Diff.**	**SD**	***P(p)***
E1	Economic growth and employment generation	4.48	2	**0.00**	3.93	9	**0.00**	0.54	0.94	**0.00**
E2	Green/sustainable development and energy conservation	3.39	22	**0.00**	3.11	24	0.25	0.28	1.09	**0.01**
E3	Safety management and security	3.65	11	**0.00**	3.23	22	**0.02**	0.42	1.14	**0.00**
E4	Proper traffic management during project development	3.91	7	**0.00**	3.67	12	**0.00**	0.25	1.06	**0.02**
E5	Incorporating accessibility facilities for the disabled groups	3.58	15	**0.00**	3.35	18	**0.00**	0.23	1.20	**0.05**
E6	Enhance indigenous people's spiritual connection with land	3.10	24	0.36	3.50	14	**0.00**	-0.40	1.28	**0.00**
E7	Preservation of biodiversity and natural resources	3.55	17	**0.00**	4.29	5	**0.00**	-0.73	1.20	**0.00**
E8	Improve neighbourhood quality and stakeholder wellbeing	3.70	9	**0.00**	4.45	4	**0.00**	-0.75	0.97	**0.00**
E9	Transparency, and fulfilling regulations and standards	4.52	1	**0.00**	3.22	23	**0.03**	1.30	1.12	**0.00**
E10	Tourism attractiveness, and showcasing national identity and international reputation	3.67	10	**0.00**	3.29	20	**0.00**	0.38	1.29	**0.00**
E11	Accessing and democratic sharing of project information	3.60	14	**0.00**	3.77	11	**0.00**	-0.17	1.23	0.16
E12	Prevention of pollution, flooding and erosion	4.00	6	**0.00**	4.02	8	**0.00**	-0.02	0.96	0.84
E13	Appropriate compensation and relocation plan/strategy	4.23	4	**0.00**	4.54	2	**0.00**	-0.31	0.79	**0.00**
E14	Increased use of substitute local resources e.g. materials	3.75	8	**0.00**	4.50	3	**0.00**	-0.75	0.95	**0.00**
E15	Promotion of intergenerational equity	3.37	23	**0.00**	3.30	19	**0.00**	0.07	1.06	0.52
E16	Access to social/welfare facilities and location of multi-activities	4.34	3	**0.00**	4.11	6	**0.00**	0.23	0.86	**0.01**
E17	Promotion of community cohesion and social equity	3.52	18	**0.00**	4.73	1	**0.00**	-1.21	0.97	**0.00**
E18	Environmental health and comfort e.g. interior hygiene	4.04	5	**0.00**	3.50	14	**0.00**	0.53	1.02	**0.00**
E19	Functionality and charges affordability to users	3.62	13	**0.00**	3.27	21	**0.02**	0.35	1.42	**0.01**
E20	Harmonization of project with local natural setting	3.57	16	**0.00**	4.09	7	**0.00**	-0.51	0.99	**0.00**
E21	Adaptability of development to changing societal needs	3.63	12	**0.00**	3.39	17	**0.00**	0.24	1.24	**0.05**
E22	Technical design e.g. aesthetics, visual permeability etc.	3.50	20	**0.00**	3.59	13	**0.00**	-0.09	1.20	0.47
E23	Involvement of stakeholders in design and planning process	3.50	20	**0.00**	3.48	16	**0.00**	0.03	1.23	0.81
E24	Conserving local cultural and historic heritage	3.51	19	**0.00**	3.81	10	**0.00**	-0.30	1.24	**0.02**
	Total			***23***			***23***			***19***

Note: M = mean; Rk = rank; *P(o)* = one sample t-test *p*-value; *P(p)* = paired t-test *p*-value; Diff. = mean difference; SD = standard deviation. The Spearman's (*r*) between GAs and ALCs is 0.214 with p-value of 0.314.

The mean score results from Table 7.5 show that the top expectations of the ALCs are following: "promotion of community cohesion and social equity" (4.73), "appropriate compensation and relocation plan/strategy" (4.54), "increased use of substitute local resources e.g. materials" (4.50), "improve neighbourhood quality and stakeholder wellbeing" (4.45), "preservation of biodiversity and natural resources" (4.29), "access to social/welfare facilities and location of multi-activities" (4.11), "harmonization of project with local natural setting" (4.09), and "prevention of pollution, flooding and erosion" (4.02).

The 'community' is explained to be a social unit sharing mutual values and interests, and whose people typically live close together (Parsons, 2008). Sociologically, the 'community' is seen as a fluid entity made up of groups and individuals who are unified by mutual attributes like physical environment, values, experiences, interests or tradition (Thompson and Kinne, 1999). A healthy community has interdependent sub-systems that are properly integrated, and share responsibility in solving problems and enhancing the corporate wellbeing of the people (Close and Loosemore, 2014). Hence, it is evident that ALCs are concerned about stakeholder cohesion, quality of neighbourhood and improvement of stakeholder wellbeing through project development (Zeng et al., 2015; El-Gohary et al., 2006; Mostafa and El-Gohary, 2015).

The ALCs are usually impacted by the project negatively or positively. One important issue that often comes up is the resettlement and compensation of individuals who are expressly impacted by project development. The resettlement and compensation programmes should be executed well to mitigate conflicts with and sustain the livelihood of the impacted stakeholders (Mahato and Ogunlana, 2011). In China, more than 160 million people have been obligatorily required to resettle because of the development of water infrastructure and construction projects in previous years (Zeng et al., 2015). However, resettlement and compensation programmes associated with

construction projects have not been historically conducted very well in Ghana (Asiama et al., 2017; Obour et al., 2016). The Volta Resettlement Scheme was conducted in the early 1960s to relocate over 80,000 people affected by the development of the Akosombo dam project and the consequent formation of the Lake Volta. However, the officials resettled several isolated townships to new areas to make use of communal socio-economic infrastructures, although there were obvious differences in the peoples' power structure, kinship background, and values. The consequences include the animosity and poor social cohesion among the people who were resettled (Chambers, 1970). Hence, the responsible officials should undertake such programmes appropriately to promote cohesion in the new formed communities.

Also, a thriving construction industry can be explained by the extent to which local resources are improved in terms of quality and availability for industrial use (UNCHS, 1981). Developing countries like Ghana rely so heavily on imported resources although there exist variety of equal alternatives that are locally produced and used at minimum rates (UNCHS, 1984). Particularly, the ALCs desire to benefit economically by supplying substitute resources for construction projects (Chan and Lee, 2008; Almahmoud and Doloi, 2015). Aside, the traditional chiefs and leaders sometimes require projects to engage workforce from the local communities to improve the economic standing of the people.

Additionally, the ALCs do express environmental concerns including the conservation of biodiversity and natural resources, and avoidance of pollution, erosion and flooding in the context of projects (Li et al., 2012a; Zhang and El-Gohary, 2016). The Atewa Range forest is a gazetted National Forest Reserve in Ghana from 1926 that has been threatened by the Ghana government's effort to acquire US$ 15 billion loan from the Chinese government. A huge part of the loan is expected to help cut down the accumulated infrastructure gap of about US$ 30 billion facing the

country presently. The contractual arrangements necessitate 15 years bauxite resource mining concession for the Chinese government in the forest area to offset the loan (Koranteng, 2018). The wide range of biodiversity enclosed within the reserve is well acknowledged. The Atewa Range forest is endeared by the people of Ghana because it serves as the waterhead of rivers, produces clean breathing air, provides wood products, source of both modern and traditional medicines, natural habitat of many plant and animal species, and influences the climate of surrounding areas (Rapid Assessment Program, 2007). Mining in the region might also cause erosion and pollution. These explain why Ghanaians are raising concerns about the potential damages of the reserve and urging the government to reconsider the agreement with China (Rocha Ghana, 2018).

Further, construction projects are expected to fit into the natural built environment settings in the communities (Li et al., 2012a). Moreover, the development of built environment infrastructure will likely help provide the local people access to social and welfare facilities, and undertake diverse socio-economic activities (Li et al., 2012a; Mostafa and El-Gohary, 2015).

From the Spearman's (r) test results, the value 0.214 obtained was not significant ($p > 0.05$). This suggests that the rank orders of the expectations for both the GAs and ALCs are not strongly and significantly correlated. However, the paired sample t-test results from Table 7.5 show that 19 common expectations between the GAs and ALCs in construction projects of Ghana are statistically significant ($p < 0.05$). As such, the null hypothesis that no significant difference occurs between the GAs and ALCs on the 19 expectations is not supported. Considering the mean differences, the expectations between the GAs and ALCs with top mean differences (Diff. $\geq \pm 0.50$) include "transparency, and fulfilling regulations and standards" (Diff. = 1.30), "promotion of community cohesion and social equity" (Diff. = -1.21), "improve neighbourhood quality and stakeholder wellbeing" (Diff. = -0.75), "increased use of substitute local resources e.g. materials"

(Diff. = -0.75), "preservation of biodiversity and natural resources" (Diff. = -0.73), "economic growth and employment generation" (Diff. = 0.54), "environmental health and comfort e.g. interior hygiene" (Diff. = 0.53), and "harmonization of project with local natural setting" (Diff. = -0.51).

7.4.4 Comparison of Expectations Between General Public and Affected Local Communities

The results of the mean score ranking and one sample t-tests of the expectations of ALCs and GP stakeholders have already been covered in the previous two sections (Sections 7.4.2 and 7.4.3). The Spearman's (*r*) test between the GP and ALCs on the expectations resulted in the value 0.520, which is significant ($p < 0.05$). The outcome reveals that the expectations pursued by the GP have significant positive correlation with the expectations pursued by the ALCs in construction projects of Ghana. Thus, the most important expectations of the GP stakeholders are likely similar with the most important expectations of the ALCs in projects, and vice versa. From Table 7.6, the outcomes of the paired-sample t-test manifest that ten expectations are significantly different between the GP and ALCs in projects ($p < 0.05$). This infers that the corresponding null hypothesis is unsupported.

As revealed in the same Table 7.6, the expectations with the largest mean differences (Diff. $\geq \pm$ 0.05) are as follows: "functionality and charges affordability to users" (Diff. = 1.45), "increased use of substitute local resources e.g. materials" (Diff. = -1.05), "appropriate compensation and relocation plan/strategy" (Diff. = -0.79), "harmonization of project with local natural setting" (Diff. = -0.73), "preservation of biodiversity and natural resources" (Diff. = -0.63), and "accessing and democratic sharing of project information" (Diff. = -0.57).

Table 7.6 Comparison of expectations between GP stakeholders and ALCs

		General public			Affected local communities					
S/N	**Expectations of external stakeholders**	**Mn**	**Rk**	***P(o)***	**Mn**	**Rk**	***P(o)***	**Diff.**	**SD**	***P(p)***
E1	Economic growth and employment generation	4.35	4	**0.00**	3.93	9	**0.00**	0.42	0.87	**0.00**
E2	Green/sustainable development and energy conservation	3.25	20	**0.01**	3.11	24	0.25	0.13	0.88	0.12
E3	Safety management and security	3.23	22	**0.02**	3.23	22	**0.02**	0.00	1.08	1.00
E4	Proper traffic management during project development	3.62	11	**0.00**	3.67	12	**0.00**	-0.05	1.05	0.64
E5	Incorporating accessibility facilities for the disabled groups	3.43	15	**0.00**	3.35	18	**0.00**	0.08	1.08	0.47
E6	Enhance indigenous people's spiritual connection with land	3.12	24	0.23	3.50	14	**0.00**	-0.37	1.14	**0.00**
E7	Preservation of biodiversity and natural resources	3.66	10	**0.00**	4.29	5	**0.00**	-0.63	1.09	**0.00**
E8	Improve neighbourhood quality and stakeholder wellbeing	4.55	3	**0.00**	4.45	4	**0.00**	0.10	0.68	0.12
E9	Transparency, and fulfilling regulations and standards	3.39	17	**0.00**	3.22	23	**0.03**	0.17	0.99	0.08
E10	Tourism attractiveness, and showcasing national identity and international reputation	3.37	18	**0.00**	3.29	20	**0.00**	0.09	0.92	0.34
E11	Accessing and democratic sharing of project information	3.20	23	**0.04**	3.77	11	**0.00**	-0.57	1.32	**0.00**
E12	Prevention of pollution, flooding and erosion	4.07	6	**0.00**	4.02	8	**0.00**	0.05	0.87	0.58
E13	Appropriate compensation and relocation plan/strategy	3.75	8	**0.00**	4.54	2	**0.00**	-0.79	1.00	**0.00**
E14	Increased use of substitute local resources e.g. materials	3.46	14	**0.00**	4.50	3	**0.00**	-1.05	0.96	**0.00**
E15	Promotion of intergenerational equity	3.25	20	**0.01**	3.30	19	**0.00**	-0.06	0.65	0.37
E16	Access to social/welfare facilities and location of multi-activities	4.18	5	**0.00**	4.11	6	**0.00**	0.07	0.92	0.46
E17	Promotion of community cohesion and social equity	4.58	2	**0.00**	4.73	1	**0.00**	-0.15	0.76	**0.04**
E18	Environmental health and comfort e.g. interior hygiene	3.59	12	**0.00**	3.50	14	**0.00**	0.09	0.97	0.37
E19	Functionality and charges affordability to users	4.71	1	**0.00**	3.27	21	**0.02**	1.45	1.12	**0.00**
E20	Harmonization of project with local natural setting	3.35	19	**0.00**	4.09	7	**0.00**	-0.73	1.02	**0.00**
E21	Adaptability of development to changing societal needs	3.58	13	**0.00**	3.39	17	**0.00**	0.19	1.07	0.07
E22	Technical design e.g. aesthetics, visual permeability etc.	3.85	7	**0.00**	3.59	13	**0.00**	0.26	0.82	**0.00**
E23	Involvement of stakeholders in design and planning process	3.42	16	**0.00**	3.48	16	**0.00**	-0.06	1.04	0.57
E24	Conserving local cultural and historic heritage	3.70	9	**0.00**	3.81	10	**0.00**	-0.10	1.12	0.34
	Total			***23***			***23***			***10***

Note: M = mean; Rk = rank; *P(o)* = one sample t-test *p*-value; *P(p)* = paired t-test *p*-value; Diff. = mean difference; SD = standard deviation. The Spearman's (*r*) between GP and ALCs is 0.520 with p-value of 0.009.

Practitioners should be aware of the higher differences between the expectations of GP and ALCs while balancing project requirements to ensure equity and mutually satisfying solutions.

7.5 OBSTACLES OF EXTERNAL STAKEHOLDER MANAGEMENT IN PROJECTS

In Section C of the ordinary questionnaire (Appendix I), the CCs were instructed to score the extent to which they perceive that the obstacles are critical in the management of ESGs in GCI projects. The obstacles were synonymous with challenges, problems, barriers, hindrances and difficulties in literature. The data collected on the ESM obstacles in the GCI were analysed using mean score ranking and PCFA. The mean scores enabled the relative criticality of the obstacles to be established, whereas the PCFA helped to group the critical obstacles based on the principal factors.

7.5.1 Consistency of Responses

Table 7.7 presents the outcomes of the Kendall's (*W)* analysis carried out on the obstacles of ESM in the GCI at 5% statistical significance level. The Kendall's (*W)* value obtained from the analysis is 0.530. With respect to the degree of freedom (29), the critical value from the chi-square table is 42.557. The result of the chi-square computation for the obstacles is significant (1615.277, $p < 0.05$). By drawing comparison between the computed chi-square value and the corresponding critical value on the chi-square table, it can be inferred that the null hypothesis of there being no significant concordance among the ratings of obstacles by CCs is not supported. Thus, the respondents' ratings of the obstacles of ESM in construction projects are mutually consistent and in strong agreement (Siegel and Castellan, 1988).

Table 7.7 Kendall's (*W*) and reliability results on ESM obstacles

Variable	Result
Kendall's (*W*)	0.530
Chi-square	1615.277
Degree of freedom (df)	29
Critical value of chi-square	42.557
Asymp. Sig.	0.000

7.5.2 Establishing the Relative Criticality Levels of the Obstacles of ESM in Projects

The relative criticality levels of the 30 obstacles were established using mean score ranking (Table 7.8). The criticality benchmark adopted for this research is a mean score of 3.00 (Yang et al., 2010). Hence, all obstacles having means score of at least 3.00 were considered as critical for the management of ESGs in the project environment. It is observable from the table that the obstacles obtained mean scores ranging from 4.88 to 2.19. By considering the mean score benchmark, only 25 of the 30 factors are critical for ESM in construction projects. The top-ranked obstacles based on mean scores are as follows: "ineffective communication with stakeholders" (4.88), "lack of well-functioning management strategies, methods, approach or process" (4.79), "managers lacking required knowledge, skills and experience" (4.61), "stakeholder involvement is burdensome and time-consuming" (4.48), "distrust and challenging relationships making stakeholders hold back vital information" (4.40), "project organisations pursuing self-interest at the expense of stakeholders" (4.26), "external stakeholder environment is non-transparent and difficult to analyse" (4.20), "failure to cooperate with affected and adverse stakeholders" (4.12), and "negative attitude of stakeholders towards project e.g. petitions or protests" (4.04).

Similarly, Buertey et al. (2016) identified inadequate consultative meetings, limited participation duration, failure to add views of stakeholders to scope definition, and ineffective communication with stakeholders as critical barriers of stakeholder engagement in community projects of Ghana.

The stated scholarly work confirms that the outcomes of this study are largely in agreement with the real problems facing PMs while managing ESGs in the GCI.

Table 7.8 Mean ranking of the obstacles of ESM in projects

S/N	Obstacles of external stakeholder management	Mean	SD	Rank
B5	Ineffective communication with stakeholders	4.88	0.33	1
B7	Lack of well-functioning management strategies, methods, approach or process	4.79	0.41	2
B15	Managers lacking required knowledge, skills and experience	4.61	0.55	3
B29	Stakeholder involvement is burdensome and time-consuming	4.48	0.61	4
B4	Distrust and challenging relationships making stakeholders hold back vital information	4.40	0.63	5
B16	Project organisations pursuing self-interest at the expense of stakeholders	4.26	0.67	6
B18	External stakeholder environment is non-transparent and difficult to analyse	4.20	0.74	7
B6	Failure to cooperate with affected and adverse stakeholders	4.12	0.66	8
B1	Negative attitude of stakeholders towards project e.g. petitions or protests	4.04	0.72	9
B23	Insufficient and unclear information at the early project stages	3.83	0.80	10
B17	Lack of monitoring and reporting actual conditions of affected stakeholders	3.79	0.86	11
B22	Absence of comprehensive and effective stakeholder engagement process	3.78	0.72	12
B3	Poor perceptions of managers e.g. seeing stakeholders as enemies	3.76	0.81	13
B9	Stakeholders obtaining support from more powerful institutions	3.70	0.96	14
B14	Stakeholders having limited knowledge of project plans and objectives	3.69	0.86	15
B11	Hidden/invisible stakeholders with unseen power and influential links	3.65	0.89	16
B13	Negative public opinion and media coverage of project	3.62	0.82	17
B25	Highly dynamic stakeholder environment	3.60	0.85	18
B10	Opportunistic political actions among stakeholder groups	3.54	1.03	19
B24	Insufficient resources to manage stakeholders	3.51	1.00	20
B27	Misunderstanding stakeholders' conflicting interests and concerns	3.50	0.97	21
B2	Unbalanced distribution of stakeholder power and interests	3.47	0.92	22
B30	Intrinsic (local) cultural values at variance with project plans and objectives	3.30	0.91	23
B8	Project complexity and multiplicity of stakeholders	3.13	0.76	24
B12	Different and competing values and beliefs of stakeholders	3.06	0.82	25
B21	Ambiguous instructions in stakeholder prioritization	2.82	0.57	26
B28	Bureaucratic and complicated permitting process	2.50	0.67	27
B19	Insufficient analysis of alternative project solutions and corresponding impacts	2.42	0.66	28
B20	Managers hesitating to change predetermined proposal	2.37	0.72	29
B26	Excessive task conflicts that undermine collaboration	2.19	0.64	30

7.5.3 Grouping the Critical Obstacles of External Stakeholder Management in Projects

PCFA was performed on the 25 critical obstacles in order to establish groups of variables that could be explained by principal factors. PCFA was necessary to explore the underlying relationships as there is limited prior information on the structure of the 25 ESM obstacles (Ameyaw and Chan, 2016). The 1:5 variable-to-sample size ratio has been suggested as a rule of thumb to assess the adequacy of sample size for conducting FA (Lingard and Rowlinson, 2006). The factor-to-sample size ratio in this research is 1:4.2 (25:105), which is smaller than the aforementioned requirement. Nevertheless, there were many occasions where CEM studies that could not meet this requirement still proceeded confidently and reliably by fulfilling other recommended preliminary tests to confirm the appropriateness and adequacy of the responses for FA. The preliminary tests include reliability test, KMO test for measuring sampling adequacy, Bartlett's test of sphericity, and correlation matrix (Norusis, 2008; Osei-Kyei et al., 2017; Ahadzie et al., 2008). Besides, a sample of 105 CCs is adequate for this research where comparison is drawn with other CEM studies (Osei-Kyei et al., 2017; Ameyaw and Chan, 2016; Ahadzie et al., 2008). Hence, the preliminary tests were carried out to establish if the sample size of this research is adequate and appropriate for carrying out the PCFA.

The reliability analysis on the 25 critical ESM obstacles returned a Cronbach's (α) value of 0.904. The value is more than the recommended benchmark of 0.70 (Nunnally, 1978), indicating that the scale of questionnaire is reliable and responses of the CCs are consistent. Also, a large number of the correlation values, explaining the extent of relationship between critical obstacle parings, were found to be more than 0.30 (Yang et al., 2009b; Norusis, 2008). This manifests that there are considerable correlations occurring among the factors, and they could be grouped and explicated by simplified components. Additionally, the KMO statistic is greater than 0.500 (i.e. 0.846) and

the Bartlett's test is significant ($p < 0.05$), with approximate chi-square of 1038.9 for the obstacles. It can be inferred that the hypothesis of the population correlation matrix of the critical obstacles being an identity matrix is not supported. The outcomes of all the preliminary tests confirm the properness and adequacy of the dataset for PCFA (Norusis, 1993; 2008).

PCFA was conducted on *IBM SPSS Statistics 20* with varimax rotation and Kaiser normalization and returned a six-factor solution. Only the principal factors having eigenvalues of at least 1.0 were regarded to be significant and shortlisted (Kim and Mueller, 1994). All the item loadings on the six factors are more than 0.500 except "negative public opinion and media coverage of project" (B13) with loading of 0.407. The factor (B13) was retained because considerable misunderstanding and conflicts in projects arise from controversies among the public that is magnified through the media platforms (IUCN, 2015; Bokor, 2011). Hence, factor B3 was considered essential and will help practitioners to devise appropriate ESM strategies in construction projects. The six-factor solution of the critical obstacles generated jointly explain about 60.798% of the total variance. Accordingly, the six factors adequately explain the obstacles faced by practitioners in managing the ESGs in project development. The extracted principal factors are subjectively labelled as follows (Table 7.9): (1) limited management capability, (2) stakeholder influence potential and cultural differences, (3) dynamic and uncertain stakeholder environment, (4) political actions and invisibility of stakeholders, (5) limited project knowledge and collaboration problems, and (6) stakes maldistribution and adversarial perspectives.

Table 7.9 Rotated component matrix of the critical obstacles of ESM in projects

		Factor loading	Rotated sums of squared loadings		
S/N	**Critical obstacles of external stakeholder management**		**Total**	**% of variance**	**Cumu-lative %**
F 1	*Limited management capability*		3.694	14.775	14.775
B18	External stakeholder environment is non-transparent and difficult to analyse	0.757			
B16	Project organisations pursuing self-interest at the expense of stakeholders	0.703			
B17	Lack of monitoring and reporting actual conditions of affected stakeholders	0.645			
B7	Lack of well-functioning management strategies, methods, approach or process	0.643			
B15	Managers lacking required knowledge, skills and experience	0.571			
B29	Stakeholder involvement is burdensome and time-consuming	0.550			
B5	Ineffective communication with stakeholders	0.544			
F 2	*Stakeholder influence potential and cultural differences*		2.777	11.11	25.885
B9	Stakeholders obtaining support from more powerful institutions	0.780			
B30	Intrinsic (local) cultural values at variance with project plans and objectives	0.654			
B12	Different and competing values and beliefs of stakeholders	0.616			
B8	Project complexity and multiplicity of stakeholders	0.600			
F 3	*Dynamic and uncertain stakeholder environment*		2.511	10.042	35.927
B25	Highly dynamic stakeholder environment	0.672			
B24	Insufficient resources to manage stakeholders	0.636			
B27	Misunderstanding stakeholders' conflicting interests and concerns	0.630			
B23	Insufficient and unclear information at the early project stages	0.561			
B13	Negative public opinion and media coverage of project	0.407			
F 4	*Political actions and invisibility of stakeholders*		2.084	8.334	44.261
B10	Opportunistic political actions among stakeholder groups	0.734			
B11	Hidden/invisible stakeholders with unseen power and influential links	0.668			
F 5	*Limited project knowledge and collaboration problems*		2.075	8.301	52.562
B14	Stakeholders having limited knowledge of project plans and objectives	0.728			
B6	Failure to cooperate with affected and adverse stakeholders	0.607			
B22	Absence of comprehensive and effective stakeholder engagement process	0.563			
B4	Distrust and challenging relationships making stakeholders hold back vital information	0.523			
F 6	*Stakes mal-distribution and adversarial perspectives*		2.059	8.235	60.798
B2	Unbalanced distribution of stakeholder power and interests	0.708			
B3	Poor perceptions of managers e.g. seeing stakeholders as enemies	0.698			
B1	Negative attitude of stakeholders towards project e.g. petitions or protests	0.602			

[a]Rotation converged in 15 iterations.

7.5.3.1 Limited Management Capability

Factor 1 explains about 14.775% of total variance and the loadings range from 0.544 to 0.757 (Table 7.9). The CCs believe that "external stakeholder environment is non-transparent and difficult to analyse" is a huge challenge in the GCI. Many ESGs in the GCI are not properly institutionalised and that makes it difficult for practitioners to ascertain and analyse them effectively. Practitioners do not hold the same view that the absolute picture of the PSE could be realised purely through formal data collection about the ESGs and analysis. However, more natural and informal engagement with the ESGs will complementarily reveal emergent issues in the PSE (Aaltonen, 2011). Similarly, Yang (2014) advocated for both empiricism and rationalism in analysing multi-stakeholders and their issues in projects. Another critical obstacle is "project organisations pursuing self-interest at the expense of stakeholders" in project development. ESGs may oppose project implementation if the project organisations are only fascinated about pursuing self-interests despite the highly sensitive PSE they are operating in (Ivory, 2004; Smyth, 2008). Such project organisations may fail to embrace stakeholders' requests or collect opinions from the bottom altogether (Olander, 2007; Yu and Leung, 2015), and that may become devastating for the project in future. As such, the advocacy for a more equitable SM approach has been soaring in literature (Freeman et al., 2007).

In addition, "lack of monitoring and reporting actual conditions of affected stakeholders" is a critical barrier that could lead to misjudgement of ESGs and their expectations in project. Big projects like the construction of dams and highways could affect a vast number of people in terms of properties and lands. Some practitioners may be inexperienced to properly foresee or assess the changing true situation of project impacts on ESGs (Mahato and Ogunlana, 2011). Potentially, mismatched solutions could be applied to the already serious problems created for the ESGs. For

instance, the large number of people who were resettled to make way for the creation of the Volta Lake and construction of the Akosombo Dam in Ghana faced social cohesion problem because the process was not well executed (Chambers, 1970). With regards to the management activities, the obstacles include "lack of well-functioning management strategies, methods, approach or process" and "managers lacking required knowledge, skills and experience". The limitedness of systematic guidelines and unpreparedness of practitioners explain why they prefer random approaches for managing ESGs in construction projects, which may eventually be unrewarding (Yang and Shen, 2015; Maylor, 2001). Therefore, practitioners require continuous upgrade of their SM skills, experiences and knowledge so that they will become suitable to handle the uncertain and changing nature of the issues in the ESE (Yang and Shen, 2015).

Furthermore, practitioners face interaction challenges comprising "stakeholder involvement is burdensome and time-consuming" and "ineffective communication with stakeholders". The communication problems with ESGs originate from weak channels and processes of communication, and differences in gender, language, culture and power (Yitmen, 2015; Storvang and Clarke, 2014; Olander and Landin, 2008; Ng et al., 2014). Presently, the multi-stakeholder involvement process is considered to be complicated and bureaucratic despite its benefits in project development (Ng et al., 2014; Yu and Leung, 2015). Officials fear that involvement of ESGs during the planning and implementation of projects will prolong the timelines (Storvang and Clarke, 2014). Realistically, the involvement of ESGs in projects is still at infancy and has not been fully appreciated in most developing countries like Ghana.

7.5.3.2 Stakeholder Influence Potential and Cultural Differences

Factor 2 explains 11.11% of the total variance and the loadings range from 0.600 to 0.780 (Table 7.9). The most critical obstacle in this group is "stakeholders obtaining support from more

powerful institutions". Low salience ESGs may seek support from more powerful institutions to boost their influence potential and be highly prioritized in project decisions (De Schepper et al., 2014). Practitioners may relatively lose their powerbase and find it more challenging to deal with such ESGs. In the proposed Oosterweel connection project, pressure groups increased their powerbases by associating with independent institutions (e.g. European Commission) and eventually stopped the project through referendum (De Schepper et al., 2014).

In the broad cultural context, "intrinsic (local) cultural values at variance with project plans and objectives" and "different and competing values and beliefs of stakeholders" are critical ESM obstacles in the GCI. The relevance of cultural values has been emphasized as part of the social responsibility set of construction projects (Yang and Shen, 2015). Culture, values and religious beliefs of the ESGs have become prevalent issues in construction projects of developing countries. The differences in cultural and religious beliefs have been recognized as a key source of construction conflicts (Ezeabasili et al., 2015). In the implementation of major dam projects in Ghana (e.g. Akosombo and Kpong dams), the community stakeholders raised concerns about the loss of sacred places linked with their local culture and beliefs (Obour et al., 2016). Emphatically, deities and ancestors have gained perpetual relevance in GCI projects as indispensable stakeholders (Dansoh et al., 2019). These cultural and religious differences could become overbearing for the practitioners in construction projects.

Another critical obstacle in this group is the "project complexity and multiplicity of stakeholders". The poor record of SM in the construction industry could be explained by the complexity and uncertainty of construction projects due to their uniqueness (Yang et al., 2009b; Park et al., 2017). This is because the increasing complexity and size of construction projects relatively affect more stakeholders. Moreover, the lack of formalised SM practice framework is because of the

multiplicity of stakeholders and project tasks. The many associated changes in projects hinder the effort of formalizing best SM practices in the industry (Yang and Shen, 2015). The multiplicity of the ESGs in projects with diverse expectations could cripple the management efforts of practitioners (Loosemore, 2006).

7.5.3.3 Dynamic and Uncertain Stakeholder Environment

Factor 3 as well explains 10.042% of the total variance and the five factor loadings are from 0.407 to 0.672 (Table 7.9). The top factors in this group are "highly dynamic stakeholder environment" and "insufficient resources to manage stakeholders". The ever-changing ESEs surrounding construction projects have been emphasized in literature (Elias et al., 2004; Eskerod and Vaagaasar, 2014; Aaltonen and Kujala, 2010). The ESGs could be supportive of project at certain time and oppose project at another time. The dynamics of the ESE negatively affect project development (De Schepper et al., 2014). The inability of practitioners to cope with the significant high number of changes in the ESE could lead to poor management of ESG expectations. In general, the limitation of supporting resources obstructs the engagement process at the broader level and the intended outcomes (Manowong and Ogunlana, 2006; Yu and Leung, 2015). This could explain why ESG engagement is poorly practised in the GCI.

Moreover, the "insufficient and unclear information at the early project stages", "misunderstanding stakeholders' conflicting interests and concerns" and "negative public opinion and media coverage of project" are challenges of the ESM process in the GCI. At the early project stages, available information may be inadequate and unclear (Yu and Leung, 2015; Olander and Landin, 2005). The decision-making process becomes much more conjectural in nature and problematic. Aside, conflicts and controversies abound where ESGs are unclear about their needs and expectations in project, or where practitioners fail to acknowledge the diverse interests of the ESGs (Laroche,

2003; Olander and Landin, 2005). Also, where the project development is surrounded by negative image and public opinions, practitioners will experience difficulties in communicating project values to the ESGs for consensus (Olander, 2007).

7.5.3.4 Political Actions and Invisibility of Stakeholders

Factor 4 explains about 8.334% of the total variance and the loadings of the two variables are 0.734 and 0.668 (Table 7.9). The two critical obstacles are "opportunistic political actions among stakeholder groups" and "hidden/invisible stakeholders with unseen power and influential links" in projects. Political opportunity explains the readiness of the ESE for collective political actions. The multiplication of political opportunities because of high level of threats enhances the mobilization of ESGs to oppose project development. ESGs take advantage of the political atmosphere to lobby their interests in the project decisions (Boudet and Ortolano, 2010). The collective political action of ESGs was able to abort the implementation of STX housing project in Ghana (Bokor, 2011; Owusu, 2012). ESGs (e.g. pressure groups) may be hidden with little apparent influence at certain project stage and only arise to influence project in the near future when they feel adversely affected (Bourne and Walker, 2006). Such experiences could be very disruptive for construction projects as practitioners would be unprepared to handle them.

7.5.3.5 Limited Project Knowledge and Collaboration Problems

Factor 5 explains 8.301% of the total variance and the factor loadings span 0.523 and 0.728 (Table 7.9). The "absence of comprehensive and effective stakeholder engagement process" and "failure to cooperate with affected and adverse stakeholders" are obstructions to ESM in the GCI. Generally, effective collaboration and knowledge exchange among stakeholders contribute to innovation diffusion and performance of construction projects (Xue et al., 2018; Staykova and Underwood, 2017). Although positive attitude towards ESG engagement promises success and

project acceptance (Manowong and Ogunlana, 2006), practitioners prefer to circumvent the engagement mechanisms or do it ineffectively following formality. This is because they are not ready to go through the extensive procedures (Ng et al., 2012). The problems with the present practice of public engagement include inadequate EIA, unclear procedures and principles of hearing, and power influence at hearing (Manowong and Ogunlana, 2006). The failure of responsible authorities to cooperate with the affected ESGs led to the extreme delay of the MWDP (IUCN, 2015).

Additionally, the "stakeholders having limited knowledge of project plans and objectives" and "distrust and challenging relationships making stakeholders hold back vital information" are critical obstacles of ESM in Ghana. Some ESGs may lack knowledge and skills required to read construction drawings and comprehend industry jargons (Barrett and Stanley, 1999). Moreover, the ESGs do lack knowledge about the project objectives and that affects the results of the engagement process (El-Gohary et al., 2006; Mahato and Ogunlana, 2006; 2011). Further, stakeholder and relationship management is underdeveloped phenomenon in the construction industry (Rowlinson et al., 2010). Distrust is magnified in ESG relationships where controversies abound in project development. Meanwhile, public controversies are found to be serious problems facing the implementation of large projects (Mok et al., 2017). The stakeholders would rather prefer to hold back than share sensitive project information where there is no trust (Smyth et al., 2010; Olander and Landin, 2005). Prevalence of distrust issues in the PSE hindered the success of the MWDP and XTS housing project (IUCN, 2015; Bokor, 2011; Owusu, 2012). This relationship deficiency will create a hindrance for the pursuit of equitable engagement and sustainable project delivery.

7.5.3.6 Stakes Mal-distribution and Adversarial Perspectives

Factor 6 explains 8.235% of the total variance and the factor loadings range from 0.602 to 0.708 (Table 7.9). In this group, the factors "poor perceptions of managers e.g. seeing stakeholders as enemies" and "negative attitude of stakeholders towards project e.g. petitions or protests" were named as critical obstacles. It has been revealed that practitioners have wrong perceptions about the ESGs such as seeing them as enemies who will rather prolong and sabotage projects (Close and Loosemore, 2014; Storvang and Clarke, 2014). The practitioners therefore put on a mindset that allows them to only develop projects out of technical and financial motivations that do not incorporate the expectations and values of the ESGs (Olander and Landin, 2008). In response, the ESGs are likely to use informal approaches like protest, petitions and picketing to attempt influencing projects in their own interests (El-Sawalhi and Hammad, 2015; Ng et al., 2014). Practitioners rushing through the engagement exercise or neglecting it altogether due to such wrong perceptions will put the project development at high risk of failing (Ng et al., 2012). The failure of both MWDP and STX mass housing project could be partially attributed to the wrong perception of the responsible officials (IUCN, 2015; Owusu, 2012).

The last ESM obstacle in this group is "unbalanced distribution of stakeholder power and interests". It has been emphasized that the unbalanced nature of multi-stakeholder interests and power distribution during the engagement exercises multiply conflicts. Thus, unequal power and diversified interests of multi-stakeholders impact the conflict levels and their mutual satisfaction during the engagement exercises (Leung et al., 2013b). To minimize such conflicts, the responsible persons ought to ensure equality and fairness to boost participation, and minimize unequal distribution of interests and power of multi-stakeholders (Sunshine and Tyler, 2003).

7.6 CRITICAL SUCCESS FACTORS OF ESM IN CONSTRUCTION PROJECTS

The CCs were again requested to score the importance level of each factor contributing to ESM success in construction projects of Ghana (Appendix I). The responses were analysed using mean scores to establish the relative importance levels and PCFA to group the CSFs.

7.6.1 Consistency of Responses

The results of the Kendall's (*W)* computation on the CSFs are captured in Table 7.10. The analysis was conducted at 5% statistical significance level and returned a Kendall's (*W)* value of 0.357. The corresponding critical value for 24 degree of freedom on the chi-square table is 36.415, whereas the computed chi-square value of 899.784 is significant ($p < 0.05$). By drawing comparison, it can be inferred that the null hypothesis of there being no significant agreement on the ratings of CSFs by the CCs is rejected. Accordingly, the respondents' ratings of the CSFs for ESM in construction projects are consistent and in agreement (Siegel and Castellan, 1988).

Table 7.10 Kendall's (*W*) and reliability results on the CSFs of ESM

Variable	Result
Kendall's coefficient of concordance (*W*)	0.357
Chi-square	899.784
Degree of freedom (df)	24
Critical value of chi-square	36.415
Asymp. Sig.	0.000

7.6.2 Establishing the Relative Importance Levels of the CSFs for ESM in Projects

The 25 CSFs for ESM were ranked following the mean scores and presented in Table 7.11. It is manifest that the mean scores of the CSFs are from 2.581 to 4.752. The 3.00 mean score benchmark was adopted to establish the important CSFs for ESM (Yang et al., 2010). As such, all the CSFs except CSF18 are considered important for further analysis in this research. The top-ranked CSFs for ESM based on mean scores are as follows: "involvement of stakeholders in decision making" (4.752), "promoting and sustaining good relationship with stakeholders" (4.667), "ensuring mutual

trust and respect with and among stakeholders" (4.610), "effective communication with stakeholders e.g. costs and benefits" (4.610), "identifying stakeholders properly" (4.495), "understanding areas of stakeholders' interests" (4.229), and "clearly defining project mission and objectives" (4.057).

Table 7.11 Mean ranking of the CSFs of ESM in construction projects

S/N	Critical success factors (CSFs) of external stakeholder management	Mean	SD	Rank
CSF16	Involvement of stakeholders in decision making	4.752	0.476	1
CSF22	Promoting and sustaining good relationship with stakeholders	4.667	0.583	2
CSF23	Ensuring mutual trust and respect with and among stakeholders	4.610	0.546	3
CSF21	Effective communication with stakeholders e.g. costs and benefits	4.610	0.643	3
CSF4	Identifying stakeholders properly	4.495	0.637	5
CSF11	Understanding areas of stakeholders' interests	4.229	0.737	6
CSF3	Clearly defining project mission and objectives	4.057	0.864	7
CSF17	Formulating appropriate strategies to handle stakeholders	3.971	0.882	8
CSF2	Allocating sufficient resources to manage stakeholders	3.876	0.863	9
CSF6	Exploring stakeholders' needs and constraints about project	3.867	1.010	10
CSF5	Collecting adequate information about stakeholders	3.838	0.878	11
CSF1	Managing the external stakeholders with social responsibilities	3.819	0.918	12
CSF8	Assessing attributes (power, urgency and proximity) of stakeholders	3.791	1.026	13
CSF25	Analysing the changes in stakeholder environment e.g. influence	3.791	1.053	13
CSF24	Obtaining support and assistance from higher authorities	3.762	1.005	15
CSF20	Continuous evaluation of stakeholders' satisfaction with strategies	3.752	0.896	16
CSF10	Analysing conflicts and coalitions among stakeholders	3.724	0.956	17
CSF13	Determining the strengths and weaknesses of stakeholders	3.686	0.944	18
CSF12	Predicting the influence of stakeholders accurately	3.571	0.979	19
CSF9	Assessing stakeholders' behaviours e.g. cooperative potential, competitive threat etc.	3.438	0.843	20
CSF14	In-depth and transparent analysis of all alternative project solutions	3.371	0.993	21
CSF19	Implementing the formulated strategies on stakeholders	3.210	0.958	22
CSF7	Acquaintance with project indigenous knowledge	3.152	0.918	23
CSF15	Compromising stakeholder conflicts through consensus building	3.076	0.895	24
CSF18	Predicting stakeholders' reactions for implementing the strategies	2.581	0.782	25

Yang et al. (2009b) investigated the CSFs to manage stakeholders in general construction projects of Hong Kong. They similarly identified proper communication and engagement with stakeholders, understanding stakeholders' interest areas, keeping good relationship, and proper identification of

stakeholders among the top-ranked CSFs. Nwachukwu et al. (2017) performed comparative analysis on the CSFs required to manage stakeholders in built heritage asset restoration projects in the UK. Accordingly, social factors like early consultation exercises with the interest groups, understanding the cultural significance of heritage assets, and keeping and promoting good stakeholder relationships were highly ranked across the respondent groups (Nwachukwu et al., 2017). Molwus et al. (2017) measured the structural interrelationships among the SM CSFs and how they contribute to construction project success in the UK. Factors like involving relevant stakeholders early to clarify project mission, exploring the stakeholders' areas of interests, and communicating properly and frequently were similarly highly prioritised (Molwus et al., 2017).

Additionally, Park et al. (2017) examined and compared the SM CSFs between general construction and long-term complex mega-construction projects in Korea. For the general construction projects, the most rated CSFs included clear project mission statement, explore stakeholders' needs, proper identification of stakeholders, keeping records, and formulation of appropriate strategies. For the long-term mega-construction projects, the CSFs included proper identification of stakeholders, keeping records, expert participation, and responding to changes such as political, economic, policy and social value change (Park et al., 2017). El-Sawalhi and Hammad (2015) conducted analysis on the factors influencing project SM in the Gaza Strip. The top-ranked factors include transparent assessment of alternate project solutions, effective communication and engagement with stakeholders, clear project mission and objective statements, and exploring needs and expectations of stakeholders (El-Sawalhi and Hammad, 2015).

It is noteworthy that formulating clear mission statement was ranked low by both Yang et al. (2009b) and Nwachukwu et al. (2017), whereas the same factor was ranked high by Park et al. (2017), El-Sawalhi and Hammad (2015) and Takim (2009). However, the CCs in this research

rated it highly important in managing ESGs. The project mission should be clarified early to serve as a fundamental guideline in managing necessary ESGs. Although Yang et at. (2009b) considered carrying out social responsibilities as the precondition and most important for SM, Park et al. (2017), El-Sawalhi and Hammad (2015), Takim (2009) and Molwus et al. (2017) found it to be of moderate and low importance in project development. Likewise, the same factor was found to be of moderate importance in managing ESGs (mean = 3.819). In general, many of the aforementioned factors are similar to the top CSFs established in this research. Therefore, it can be inferred that the CCs think ESM could be improved with similar CSFs in projects of the GCI.

7.6.3 Grouping the CSFs for ESM in Construction Projects

PCFA was conducted on the 24 CSFs to group and explain them with the underlying principal factors. Since the factor-to-sample size ratio was 1:4.375, the preliminary tests were performed to verify if the dataset is appropriate for PCFA (Section 7.5.3). The reliability test analysis returned the value 0.908 (> 0.700 benchmark) (Nunally, 1978). The value implies that the scale of the questionnaires is reliable and the CCs duly filled them uniformly. Also, a large number of the correlation values, indicating the extent of relationship between CSF parings, were found to be more than 0.30 (Yang et al., 2009b; Norusis, 2008). Besides, the KMO value obtained was 0.832 (> 0.500), and the Bartlett's test was significant ($p < 0.05$) with approximate chi-square of 1051.716. These mean the hypothesis of the population correlation matrix of the CSFs being an identity matrix is unsupported. Based on the results of the preliminary tests, PCFA could be appropriately and adequately conducted on the dataset (Norusis, 1993; 2008).

PCFA was conducted on the CSFs with varimax rotation and Kaiser normalization, and returned a seven-factor solution. Only the principal factors having eigenvalues not less than 1.0 were considered to be significant and retained (Kim and Mueller, 1994). Except for the factors CSF9,

CSF15, CSF16 and CSF25, all the CSFs were loaded heavily on the corresponding principal factors (> 0.500). However, the four factors were retained in the analysis for two reasons: (1) the factor CSF16 obtained the highest position in the mean ranking, and (2) the factors were repeatedly considered important for managing stakeholders in other jurisdictions (Park et al., 2017; Molwus et al., 2017; Yang et al., 2009b; Nwachukwu et al., 2017). Hence, it will be equally relevant for practitioners to perform these practices so that ESM could be successful in the GCI.

The seven extracted principal factors mutually explain about 66.298% of the total variance. The high percentage confirms that the seven-factor solution is an adequate representation of the factors contributing to the success of ESM in the GCI. The seven factors are labelled as (Table 7.12): (1) information gathering and continuous analysis of issues, (2) planning and undertaking responsibilities, (3) effective communication and satisfaction monitoring, (4) assessing stakeholder influence and strategizing, (5) assessing stakeholder characteristics and alternative solutions, (6) respecting and involving the stakeholders, and (7) building good relationship with stakeholders.

Table 7.12 Rotated component matrix of the CSFs for ESM in project development

S/N	Critical success factor groups	Factor loading	Rotated sums of squared loadings		
			Total	% of variance	Cumul-ative %
F 1	*Information gathering and continuous analysis of issues*		2.770	11.550	11.550
CSF7	Acquaintance with project indigenous knowledge	0.757			
CSF5	Collecting adequate information about stakeholders	0.740			
CSF6	Exploring stakeholders' needs and constraints about project	0.627			
CSF25	Analysing the changes in stakeholder environment e.g. influence	0.477			
CSF15	Compromising stakeholder conflicts through consensus building	0.368			
F 2	*Planning and undertaking responsibilities*		2.640	10.979	22.529
CSF1	Managing the external stakeholders with social responsibilities	0.765			
CSF2	Allocating sufficient resources to manage stakeholders	0.673			
CSF3	Clearly defining project mission and objectives	0.632			
F 3	*Effective communication and satisfaction monitoring*		2.630	10.941	33.469
CSF21	Effective communication with stakeholders e.g. costs and benefits	0.818			
CSF20	Continuous evaluation of stakeholders' satisfaction with strategies	0.629			
CSF24	Obtaining support and assistance from higher authorities	0.559			
CSF11	Understanding areas of stakeholders' interests	0.557			
F 4	*Assessing stakeholder influence and strategizing*		2.520	10.487	43.956
CSF17	Formulating appropriate strategies to handle stakeholders	0.721			
CSF12	Predicting the influence of stakeholders accurately	0.659			
CSF19	Implementing the formulated strategies on stakeholders	0.635			
CSF8	Assessing attributes (power, urgency and proximity) of stakeholders	0.535			
CSF9	Assessing stakeholders' behaviours e.g. cooperative potential, competitive threat etc.	0.444			
F 5	*Assessing stakeholder characteristics and alternative solutions*		2.380	9.898	53.854
CSF13	Determining the strengths and weaknesses of stakeholders	0.832			
CSF14	In-depth and transparent analysis of all alternative project solutions	0.728			
CSF10	Analysing conflicts and coalitions among stakeholders	0.651			
F 6	*Respecting and involving the stakeholders*		1.500	6.261	60.115
CSF23	Ensuring mutual trust and respect with and among stakeholders	0.791			
CSF16	Involvement of stakeholders in decision making	0.498			
F 7	*Building good relationship with stakeholders*		1.480	6.184	66.298
CSF22	Promoting and sustaining good relationship with stakeholders	0.653			
CSF4	Identifying stakeholders properly	0.598			

[a]Rotation converged in 9 iterations.

7.6.3.1 Information Gathering and Continuous Analysis of Issues

Factor 1 explains about 11.550% of the total variance and the factor loading range from 0.368 to 0.757 (Table 7.12). The factors "acquaintance with project indigenous knowledge" and "collecting adequate information about stakeholders" were found to contribute to ESM success in GCI projects. Practitioners are expected to get acquainted with the indigenous knowledge in PSE that has unique influence on project development (Aaltonen and Kujala, 2010). The ESGs are those who appraise and can accurately construe their expectations and interests in line with the local conditions and effects of projects on their living (Wei et al., 2016). Although scientific analysis yields good results about direct impacts, indirect impacts will potentially emerge from indigenous knowledge, and that could be assessed only via analysis of the ESG opinions (Jones et al., 2015; Buertey et al., 2016). In Ghana particularly, the indigenous environmental knowledge is invaluable and could complement the very limited scientific information in the country during EIA processes (Appiah-Opoku, 2001). Besides, it is important to collect information about ESGs like their contacts, interests, and constraints about the proposed project (Yang and Shen, 2015). For ethical reasons, the ESG information that is sensitive should be collected and used with care (Cleland, 1988).

Additionally, the factors "exploring stakeholders' needs and constraints about project", "analysing the changes in stakeholder environment e.g. influence" and "compromising stakeholder conflicts through consensus building" were regarded as critical analytical measures for ESM. In the context of Ghana, the needs of ESGs could be very specific in nature like compensation for property loss and providing support for the indigenes to make spiritual pacifications to the local deities. Also, the changes that occur in the political, economic, social value and policy environments should be noticed and responded to in project development (Park et al., 2017). A management support tool like SNA will help the practitioners to analyse the present relationship network or matrix in

projects and prioritize ESGs (Rowley, 1997). Mahato and Ogunlana (2011) have proposed the public participation, compensation and resettlement, and monitoring and reporting programmes to help minimize conflicts with the large multi-stakeholders in construction projects. At the PS, exploring these details is relevant to generate "satisfactory and realistic solution to the problem being addressed" (Smith and Love, 2004, p. 22).

7.6.3.2 Planning and Undertaking Responsibilities

Factor 2 also explains 10.979% of the total variance and the factor loadings range from 0.632 to 0.765 (Table 7.12). The factors captured in this group are "managing the external stakeholders with social responsibilities", "allocating sufficient resources to manage stakeholders" and "clearly defining project mission and objectives". Considering the ESGs in projects and being socially responsible towards them have been identified as the precondition of the SM process (Yang et al., 2009b) and requirement to achieve social consensus in construction projects (Park et al., 2017). The social responsibilities cover issues relating to the economy, ethics, law, environment and culture (Yang and Shen, 2015). The analysis of such social responsibilities is regarded as the core function of SM because practitioners should delineate specific ESGs and be socially responsible towards them in projects (Donaldson and Preston, 1995; Carroll, 1991).

Arguably, that practitioners who clearly understand project scope and goals achieve better SM performance (Park et al., 2017). The practitioners must clarify the project mission and further outline the SM objectives to serve as a guide for delivering projects and managing the ESGs successfully. However, the project mission and SM objectives should be reassessed frequently to ascertain whether there is need for maintenance, revision or improvement (Yang and Shen, 2015). Aside, developers and financiers have to make sufficient resources available so that practitioners can undertake ESM more equitably and successfully (El-Sawalhi and Hammad, 2015).

7.6.3.3 Effective Communication and Satisfaction Monitoring

Factor 3 explains 10.941% of the total variance and the factor loadings are from 0.557 to 0.818 (Table 7.12). The factors within this group are "effective communication with stakeholders e.g. costs and benefits", "continuous evaluation of stakeholders' satisfaction with strategies", "obtaining support and assistance from higher authorities" and "understanding areas of stakeholders' interests". In the context of Ghana, the interest areas of ESGs could be economic, social, environmental, cultural, religious, technical, legal, ethical and information sharing in nature (Chan and Oppong, 2017). These interest areas of the ESGs should be properly explored and understood by practitioners so that they can be included in project decisions (Freeman et al., 2007). In the case where some ESGs become more powerful in project (De Schepper et al., 2014), the practitioners should seek support and assistance from higher project authority. This will ensure that the practitioners are able to increase capacity, overcome objections of the ESGs, and enforce project decisions smoothly (Takim, 2009; Yang and Shen, 2015).

The communication systems and channels adopted should be feedback-oriented to allow practitioners to ensure effectiveness (Takim, 2009; Senaratne and Ruwanpura, 2016). The practitioners should focus on communicating the true project burdens and benefits adequately to the ESGs so that they will become convinced of the net benefits (Olander and Landin, 2008). The success of construction projects in Sweden has been attributed to the effectiveness of communication with ESGs (Olander and Landin, 2008). Practitioners should ensure that project information reaches the ESGs in varying languages, intensity and style as may be preferred contextually. The two-way communication will ensure that feedback is obtained on ESG satisfaction with the management strategies employed (Karlsen, 2002).

7.6.3.4 Assessing Stakeholder Influence and Strategizing

Factor 4 explains about 10.487% of the total variance and the factor loadings range from 0.444 to 0.721 (Table 7.12). The three factors "assessing attributes (power, urgency and proximity) of stakeholders", "assessing stakeholders' behaviours e.g. cooperative potential, competitive threat etc." and "predicting the influence of stakeholders accurately" relate to the analysis of the influence capacities of ESGs in projects. Power, urgency, legitimacy and proximity have been identified as key attributes for prioritizing stakeholders in projects (Bourne, 2005; Mitchell et al., 1997). These attributes enable practitioners to keep track and forecast the influence dynamics of the ESGs since it is imperative to "plan and execute a sufficiently rigorous stakeholder management process" (Olander, 2007, p. 278). Besides, the behaviours of ESGs are classified as actual behaviour, competitive threat, cooperative potential, and opposite position (Freeman, 1984; Yang and Shen, 2015), or based on supportiveness and receptiveness levels (Yang and Shen, 2015). The practitioners should analyse all these attributes properly so that a clearer picture of the ESE could be perceived.

The other factors "formulating appropriate strategies to handle stakeholders" and "implementing the formulated strategies on stakeholders" refer to the strategic approaches adopted by the practitioners to manage the ESGs in projects. The choice of strategy (holding, compromise, defence or concession) should be contingent on the characteristics of the ESGs like attitude, assigned method of engagement, and information profile (Yang and Shen, 2015). Aaltonen and Sivonen (2009) proposed response strategies including adaptation, dismissal, compromising, avoidance, and influence strategies depending on the context of the ESE. However, the devised strategies should be focused on accruing benefits to the ESGs as much as possible within the project constraints, rather than increasing conflicts and project burdens on the ESGs.

7.6.3.5 Assessing Stakeholder Characteristics and Alternative Solutions

Factor 5 explains 9.898% of the total variance and the factor loadings span 0.651 and 0.832 (Table 7.12). The factors "determining the strengths and weaknesses of stakeholders", "in-depth and transparent analysis of all alternative project solutions" and "analysing conflicts and coalitions among stakeholders" were members of this CSF group. The strengths of the ESGs comprise possession of resources, connections with political figures, support of the public, workable strategies and dedication of people, whiles the weaknesses include poor stakeholder organisation, incoherent and ineffective strategies, non-commitment of members, and inadequate political will (Cleland, 1988). Usually, ESGs will oppose project if they find out that there are more mutually beneficial alternatives than the option considered by the developers (Olander and Landin, 2005). For instance, during the Ghana government's US$10 billion negotiation with STX Korea, GREDA also presented a more lucrative alternative proposal for the government to undertake the same project at US$ 3.7 billion with additional onsite infrastructure and amenities. However, the government failed to review and consider the proposal of GREDA. This subsequently increased the opposition of project by the ESGs and resulted in abrogation of the contract signed with STX Korea before implementation (Attobrah and Otchere-Darko, 2010). Hence, it is important for developers to present alternative project solutions so that the ESGs will appraise the cost-benefit comparisons of the proposed scheme (El-Sawalhi and Hammad, 2015; Ng et al., 2014).

Further, differences and similarities in the expectations of the ESGs in projects should be adequately assessed. Whereas the similarities will result in stakeholder coalitions, the differences in expectations will create conflict scenarios (Frooman, 1999). It is essential for practitioners to explore the potential conflicts and coalitions among ESGs so that workable strategies could be applied (Freeman, 1984).

7.6.3.6 Respecting and Involving the Stakeholders

Factor 6 explains 6.261% of the total variance and the loadings for the two factors are 0.498 and 0.791 (Table 7.12). This group comprises "ensuring mutual trust and respect with and among stakeholders" and "involvement of stakeholders in decision-making". The timeous engagement of ESGs at the PS is very crucial for project success (Chinyio and Akintoye, 2008). However, practitioners should be aware that different ESGs require varying levels of engagement. According to the IFC's (2007) model, the intensity of engagement has an indirect relationship with the number of stakeholders engaged. Thus, as the engagement spectrum moves from communication strategies to negotiation and partnership, the intensity increases and the number of ESGs involved decreases. Yang et al. (2011b) proposed engagement approaches for different stakeholders including focus groups, meetings, workshops, interviews, forums and door knocks. In the context of Ghana, durbars may also be appropriate to engage the ESGs due to the roles and influence of traditional leadership in societies (ECA, 2007; Arimoro, 2015; Dansoh et al., 2019). Basically, the practitioners and developers must engage the ESGs equitably in project to ensure success and mutual satisfaction. Additionally, practitioners must ensure that there is adequate trust and respect in their relationships with ESGs (El-Sawalhi and Hammad, 2015). The trust and respect that ESGs perceive with the practitioners will ensure that they cooperate in providing required information and support for project success.

7.6.3.7 Building Good Relationship with Stakeholders

Factor 7 explains 6.184% of the total variance and the loadings for the two factors are 0.598 and 0.653 (Table 7.12). The factors "promoting and sustaining good relationship with stakeholders" and "identifying stakeholders properly" are components of this CSF group. One of the earliest activities undertaken in SM is identifying the ESGs who have stakes, can influence and/or could

be impacted by the proposed construction project development (Littau et al., 2010). Unlike the internal stakeholders, the ESGs are less organised and could even be invisible particularly at the PS. Practitioners should be proactive in identifying not only the obvious ones but also the less relevant ones at the present time (Cleland, 1988). The practitioners could use their past experiences, snowballing, and organisational guidelines to identify the ESGs (Yang et al., 2011b). Moreover, analysing the interrelationships among the ESGs will help in revealing the hidden ones at a time (Bourne and Walker, 2005). Proper and early identification of the ESGs will help practitioners to avoid emergent requirements at the later stages of projects. Further, practitioners must build sustainable relationships with the ESGs in projects. Successful relationship management has been found to improve project performance, long-term benefits and mutual SS (Rowlinson and Cheung, 2008).

7.7 CHAPTER SUMMARY

This chapter covered the outcomes of the ordinary survey conducted with CCs in the GCI. The survey entailed issues on the present practice of ESM; comparison of the importance levels of the three ESGs in project; the major expectations pursued by ESGs in projects; the obstacles hindering effective ESM; and the factors that are critical for ESM success in the GCI. Generally, it was revealed that ESM is conducted as may be applicable in each unique project context without following any systematic and clearly spelt-out process. This confirms the argument in literature that SM is most often conducted randomly in construction industry. Besides, the findings contribute to knowledge by showing significant differences among the expectations of three ESGs who are usually part of projects. The findings will help practitioners and decision-makers to plan projects more proactively by considering the differences and similarities in the expectations of the ESGs. The study also presents a comprehensive assessment of the obstacles hindering effective

ESM in projects, which was lacking in literature. The findings will serve as a basis for practitioners to plan countermeasures for managing the ESGs more successfully in projects. Again, the empirical findings provide insight into the CSFs that practitioners and decision-makers ought to grasp and apply to make ESM at the project PS more successful. Despite the saturation of literature on SM, the study's findings specifically contribute to knowledge by examining the issues from the unique contexts of the project PS, developing countries, and only ESGs. The findings provide general guidelines on what practitioners and decision-makers should expect in the ESE and how to appropriately manage the ESGs for project success in the GCI. The findings further contribute to the development of the practice framework for ESM performance improvement and assessment in the GCI. In Chapter 8, a methodology will be established to help practitioners adequately assess ESM performance at the project PS in the GCI.

CHAPTER 8 EXTERNAL STAKEHOLDER MANAGEMENT PERFORMANCE ASSESSMENT IN CONSTRUCTION PROJECTS OF GHANA

8.0 INTRODUCTION

Chapter 7 presented empirical findings of the ordinary questionnaire survey conducted with CCs in the GCI. In this chapter, a fully operational ESM performance assessment system is developed using the Delphi survey technique and further tested on a case study in Ghana. The first three rounds of Delphi survey were aimed at shortlisting the KPIs and developing the general mathematical model to evaluate ESM performance i.e. mutual external SS. Following, semi-structured interviews and a two-round Delphi survey were used to establish specific measures for the KPIs in the model. Subsequently, another Delphi questionnaire survey helped to calibrate the measures so that different performance levels could also be defined. In the final stage, an actual project case was engaged to exemplify how the performance assessment system should be used to evaluate the mutual satisfaction of the ESGs in projects. By using the system, the performance of ESM in different projects could be evaluated and compared.

8.1 INITIAL THREE ROUNDS OF DELPHI SURVEY: DEVELOPING THE PERFORMANCE INDEX

8.1.1 Profile of Experts on Panel One

Panel 1 was composed of 38 experts who were drawn from different professional background (Table 8.1). The panel size is adequate for this research as most (over 90%) Delphi surveys in CEM studies used up to 40 experts (Ameyaw et al., 2016). Therefore, the panel size used enabled the researcher to exercise proper control over the entire Delphi process in order obtain the best

outcomes. The distribution of experts in terms of the demographic data shows balance in the views of CCs, and hence, improves the generalisability of the findings.

Table 8.1 Profile of experts on panel one

Demographic data	**N**	**%**	**Demographic data**	**N**	**%**
Nature of projects			*Sector of project client*		
Building work	19	50.00	Public	15	39.47
Civil work	6	15.79	Private	5	13.16
Both	13	34.21	Both	18	47.37
Total	*38*	*100*	*Total*	*38*	*100*
Level of related experience (years)			*Professional background*		
6 to 10	12	31.58	Engineer	13	34.21
11 to 15	15	39.47	Architect	9	23.68
16 to 20	6	15.79	Quantity Surveyor	12	31.58
Above 20	5	13.16	Project/Construction Manager	4	10.53
Total	*38*	*100*	*Total*	*38*	*100*
Position in organisation					
Project/Construction Manager/Engineer/Quantity Surveyor/Architect				17	44.74
Senior Project/Construction Manager/Engineer/Quantity Surveyor/Architect				13	34.21
Director/CEO				8	21.05
Total				*38*	*100*

8.1.2 Round One of Delphi Survey: Selection and Rating of The Most Vital KPIs

8.1.2.1 Format

Together with an invitation letter, the Round 1 questionnaires were issued to the 38 identified experts by hands personally at their offices or through email per the preference of experts. The survey was commenced around mid-March 2017 in Ghana. In the invitation letter, the experts were made to know about the scope of research, the benefits to be derived from the research, and the necessary commitment they had to make throughout the data collection process. In the questionnaire, the experts were instructed to select at least 5 and at most 10 PIs that they regard to be key in assessing ESM performance at the project PS in construction. The practitioners were also instructed to score the preferred KPIs on a 5-point Likert scale of 1= “least important” to 5= “most important”. Besides, the experts were encouraged to not only consider the 22 PIs provided but also suggest more appropriate KPIs as part of their selections based on their experiential

knowledge in the GCI. Follow up was conducted on the experts who could not return dully filled questionnaires on time (within two weeks) through emails, phone calls, and personal visits to their offices. By the end of April 2017, all the 38 experts returned completed questionnaires to the researcher.

Table 8.2 Round one results of Delphi survey

New code	Performance indicators (PIs)	Round 1			
		Frequency	**Percentage**	**Mean scores**	**Rank**
KPI1	Communication effectiveness	**32**	**84.21**	**4.44**	**1st**
KPI2	Stakeholder support of project	**26**	**68.42**	**4.19**	**2nd**
KPI3	Management monitoring and response	**24**	**63.16**	**4.42**	**3rd**
KPI4	Uncertainty and risk mitigation	**22**	**57.89**	**3.91**	**4th**
KPI5	Smooth project facilitation	**21**	**55.26**	**4.24**	**5th**
KPI6	Stakeholder empowerment	**20**	**52.63**	**4.05**	**6th**
	Conflict mitigation	18	47.37	3.78	7th
	Better service delivery	17	44.74	4.47	8th
	Cost savings	14	36.84	4.57	9th
	Stakeholder rights protection	13	34.21	4.00	10th
	Public image creation	13	34.21	3.77	10th
	Sustainable lifecycle performance	12	31.58	4.33	12th
	Trust and respect in relationship	11	28.95	4.36	13th
	Stakeholder capital building	10	26.32	4.00	14th
	Implementing collective agreements	8	21.05	4.38	15th
	Enhanced organisational motivation	7	18.42	3.86	16th
	Innovation enhancement	7	18.42	3.57	16th
	Partnerships and collaborations	6	15.79	4.33	18th
	Stakeholder relational benefits	6	15.79	4.00	18th
	Mutual learning	6	15.79	3.67	18th
	Improved organisational foresight	4	10.53	4.00	21st
	Potential for marketplace success	3	7.89	4.67	22nd
	**Better scope definition	1	2.63	5.00	23rd
	Number (n)		*38*		

Notes: Bold indicates the KPIs based on the 50% shortlisting criterion; **A new indicator suggested by experts in Round 1. The mean scores for Rounds 1 were computed based on the ratings of only the experts selecting each PI.

8.1.2.2 Analysis and Results

Table 8.2 indicates the relative importance levels of the PIs in the first round. The ranking in Round 1 was according to the percentage of experts who selected each PI (Yeung et al., 2007). Based on

the majority criterion (Chan et al., 2001), only the PIs that were chosen by half or more of the practitioners were shortlisted as the KPIs to evaluate ESM performance level at the construction project PS in Ghana. Hence, the established KPIs after the Round 1 are as follows: (1) "communication effectiveness", (2) "stakeholder support of project", (3) "management monitoring and response", (4) "uncertainty and risk mitigation", (5) "smooth project facilitation", and (6) "stakeholder empowerment". Meanwhile, one expert suggested a new indicator "better scope definition", but it did not meet the shortlisting criterion to be considered as KPI.

8.1.3 Round Two of Delphi Survey: Re-selection and Re-rating of The Most Vital KPIs

8.1.3.1 Format

In the beginning of May 2017, the questionnaires for the Round 2 were issued to the experts with two weeks response deadline. The intent of the 2nd round was to allow the practitioners to modify or confirm their selections and ratings of KPIs in the previous round subject to the consolidated feedback provided. Having added the new factor, selection percentages and mean scores from Round 1 as reference, the experts were instructed to again select and rate the top 5 to 10 PIs that could be considered as KPIs to evaluate ESM performance at the project PS. Some of the experts were not able to return questionnaires within the given time. So, follow up was done through emails, phone calls and personal visit to the offices of the experts to return completed questionnaires. Eventually, one expert withdrew due to workload, and 37 experts returned completed questionnaires by ending of May 2017.

8.1.3.2 Analysis and Results

The outcomes of the analysis of the Round 2 information are shown in Table 8.3. Similarly, the 23 PIs were ranked based on the percentage of experts selecting each PI. The new set of KPIs was

also established based on the majority selection criterion (Chan et al., 2001). The KPI "stakeholder empowerment" from Round 1 was dropped out in the Round 2 and replaced by "conflict mitigation" as a top KPI. In descending order, the finally established KPIs after the Round 2 are as follows: (1) "communication effectiveness", (2) "management monitoring and response", (3) "stakeholder support of project", (4) "smooth project facilitation", (5) "uncertainty and risk mitigation", and (6) "conflict mitigation". Changes in the ranking order of the KPIs were observed in Round 2. For example, "smooth project facilitation" and "uncertainty and risk mitigation" interchanged in terms of relative importance levels.

Table 8.3 Round two results of Delphi survey

New code	Performance indicators (PIs)	Round 2			
		Frequency	**Percentage**	**Mean scores**	**Rank**
KPI1	Communication effectiveness	**35**	**94.59**	**4.46**	**1st**
KPI2	Management monitoring and response	**31**	**83.78**	**4.35**	**2nd**
KPI3	Stakeholder support of project	**30**	**81.08**	**4.27**	**3rd**
KPI4	Smooth project facilitation	**21**	**56.76**	**4.00**	**4th**
KPI5	Uncertainty and risk mitigation	**20**	**54.05**	**3.80**	**5th**
KPI6	Conflict mitigation	**19**	**51.35**	**3.84**	**6th**
	Stakeholder rights protection	18	48.65	3.89	7th
	Better service delivery	18	48.65	3.83	7th
	Cost savings	16	43.24	4.00	9th
	Stakeholder empowerment	16	43.24	3.75	9th
	Trust and respect in relationship	15	40.54	3.93	11th
	Public image creation	13	35.14	3.54	12th
	Sustainable lifecycle performance	12	32.43	4.00	13th
	Better scope definition	9	24.32	4.22	14th
	Implementing collective agreements	8	21.62	4.50	15th
	Enhanced organisational motivation	7	18.92	3.71	16th
	Partnerships and collaborations	7	18.92	3.00	16th
	Stakeholder capital building	6	16.22	4.00	18th
	Innovation enhancement	5	13.51	3.80	19th
	Potential for marketplace success	5	13.51	3.60	19th
	Stakeholder relational benefits	5	13.51	3.60	19th
	Mutual learning	3	8.11	4.33	22nd
	Improved organisational foresight	2	5.41	4.50	23rd
	Number (n)		*37*		

Notes: Bold indicates the KPIs based on the 50% shortlisting criterion.
The mean scores for Round 2 were computed based on the ratings of only the experts selecting each PI.

8.1.4 Round Three of Delphi Survey: Rating of The Most Vital KPIs

8.1.4.1 Format

At the beginning of June 2017, the questionnaires for the Round 3 were issued to the 37 panellists remaining after one withdrew. All 37 practitioners were requested to finally score the six shortlisted KPIs using 5-point Likert scale from 1= "least important" to 5= "most important". The consolidated feedback from Rounds 1 and 2 was included as reference for the experts. Only 35 dully filled questionnaires were returned by June ending 2017 upon following up on some experts through phone calls, personal visits and emails. The two experts who withdrew were busy with tight work schedules and could not devote time to complete the questionnaires. The minimum response rate of the experts was around 92% (with reference to the original panel size of 38 experts). This figure is commendable when comparisons are drawn with other CEM studies like Yeung et al. (2009b; 2007) and Ibrahim et al. (2013) having response rates of about 36%, 80% and 94% respectively.

8.1.4.2 Analysis and Results

Table 8.4 reveals the ranking of the top six KPIs of ESM according to the mean ratings. The topmost KPI established is "communication effectiveness" with mean score of 4.686. Following, the other five KPIs of ESM in descending order are "stakeholder support of project" (4.343), "management monitoring and response" (4.229), "smooth project facilitation" (4.057), "conflict mitigation" (3.914), and "uncertainty and risk mitigation" (3.714). It can be observed that the mean scores of "stakeholder support of project" (KPI 2), "communication effectiveness" (KPI 1) and "conflict mitigation" (KPI 5) improved across the three rounds. On the other hand, "uncertainty and risk mitigation" (KPI 6) and "management monitoring and response" (KPI 3) had mean scores lessened across the three rounds. Besides, the mean score of "smooth project facilitation" (KPI 4)

improved and lessened over the three rounds. The results further show that the KPIs are directly associated with the influence of the SM process on project relationships with the ESGs and project performance. In fact, a successful SM process that focuses on ameliorating relationships with ESGs is important for project performance (Rowlinson and Cheung, 2008). ESGs have attained importance in project development and their influences are more crucial at project PS where differing expectations and relationships ought to be considered systematically (Olander and Landin, 2005). Practitioners should therefore implement applicable strategies to enhance the individual KPIs so that ESM could be generally successful and the corresponding mutual satisfaction level of ESGs be improved (Oppong et al., 2017). Even though all the PIs may be useful in other project settings such as stage or nature of project (Oppong et al., 2017), giving attention to the established few KPIs would aid the assessment, benchmarking, monitoring and upgrading of ESM outcomes considerably (Masrom et al., 2013).

Table 8.4 Round three results of Delphi survey

New code	**Performance indicators (PIs)**	**Round 3**		
		Mean scores	**Rank**	**Weighting**
KPI 1	Communication effectiveness	4.686	1st	0.1879
KPI 2	Stakeholder support of project	4.343	2nd	0.1741
KPI 3	Management monitoring and response	4.229	3rd	0.1695
KPI 4	Smooth project facilitation	4.057	4th	0.1627
KPI 5	Conflict mitigation	3.914	5th	0.1569
KPI 6	Uncertainty and risk mitigation	3.714	6th	0.1489
	Number (n)		*35*	
	Total	*24.943*		*1.0000*
	Kendall's (W)			*0.231*
	Level of significance			*0.000*

Note: Round 3 ranking of KPIs was based on mean values.

8.1.5 Developing the Mathematical Assessment Model for ESM in Projects

With the purpose of confirming the nature of the mathematical model that will fit the set of KPIs, the correlation matrix of the six KPIs was computed and presented in Table 8.5. The matrix shows

that majority of the correlation values among the six KPIs are neither large nor significant statistically at 5% level. Notably, though it seems more sophisticated to use a non-linear model to fit the data, a common problem often encountered with non-linear models is the overfitting of curve, particularly when the sample of data used is not adequately large (Weisberg, 2005; Neter et al., 2005). Besides, a linear model can be assumed to be the linearized version of an unknown non-linear model if it truly exists in data (Morrison, 1991; Griffiths, 1993). Meanwhile, the relationship among the six KPIs has not been satisfactorily proven to be non-linear by observing the correlation values. Hence, it is rational and appropriate to adopt a linear weighted additive model to fit the KPIs (Yeung et al., 2007). The underlying assumption is that there may exist low probability of multiplier effect. Thus, a unit of change in one KPI's measurement unit will cause minimum changes in other KPIs' measurement units in the model due to the chain reaction. Accordingly, dissimilar units of measurement could be used to assess individual KPIs in the same model (Yeung et al., 2009b). The linear weighted additive model will be uncomplicated and easy to apply realistically in evaluating the performance of ESM at the project PS.

Table 8.5 Correlation matrix among the KPIs (round 3)

Correlation matrix	KPI 1	KPI 2	KPI 3	KPI 4	KPI 5	KPI 6
KPI 1	1	0.308	0.037	0.345*	0.244	0.141
KPI 2		1	0.362*	0.565**	0.198	0.393*
KPI 3			1	0.542**	0.330	0.174
KPI 4				1	0.457**	0.535**
KPI 5					1	0.280
KPI 6						1

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

The weightings of the KPIs were calculated using the adapted equation following (Chow, 2005):

$$W_{KPIm} = \frac{M_{KPIm}}{\sum_n M_{KPIn}} \quad for\ m = 1 \tag{8.1}$$

where W_{KPIm} stands for the weighting of a specific KPI;

M_{KPIm} signifies the mean score of a specific KPI; and

$\sum_n M_{KPIn}$ denotes the sum of mean scores of KPIs.

Accordingly, the weightings of the six KPIs were computed based on the mean scores and indicated in Table 8.4. The weightings of the KPIs are as follows: "communication effectiveness" [0.1879]; "stakeholder support of project" [0.1741]; "management monitoring and response" [0.1695]; "smooth project facilitation" [0.1627]; "conflict mitigation" [0.1569]; and "uncertainty and risk mitigation" [0.1489]. As all the available panellists individually rated all the six KPIs in the Round 3 survey, the Kendall's (*W*) was computed to ascertain the consistency of the experts' responses. The calculated Kendall's (*W*) is 0.231, and it is statistically significant at 1 percent significance level (Table 8.4). Hence, the null hypothesis that "there is no significant agreement on the rating of factors by respondents" is not supported. Because the Kendall's (*W*) was computed only after Round 3, the value is considerable when compared to other CEM studies e.g. Yeung et al. (2009b) that had (*W*) values of 0.123 and 0.253 at Rounds 3 and 4, using quite a similar methodology. Although the consistency level is low, there is expectation that it will increase where other rounds of survey are conducted. However, this study used only three rounds of survey to establish the performance assessment model in order to lessen attrition rates and raise response rates (Hallowell and Gambatese, 2010). The adoption of a three-round survey to establish the ESMPI is justified in the fact that response rates were high (92% minimum across the three rounds). Having computed the weightings of KPIs, the ESM performance could be evaluated at the project PS by using the model below (equation 8.2):

$$\begin{aligned} Index = {} & (0.1879 \times \text{Communication effectiveness}) \\ & + (0.1741 \times \text{Stakeholder support of project}) \\ & + (0.1695 \times \text{Management monitoring and response}) \\ & + (0.1627 \times \text{Smooth project facilitation}) \\ & + (0.1569 \times \text{Conflict mitigation}) \\ & + (0.1489 \times \text{Uncertainty and risk mitigation}) \end{aligned} \quad (8.2)$$

8.1.6 Discussion of Results

The results indicate that the six shortlisted KPIs would be useful and adequate in estimating the performance level of ESM process at the PS of construction projects in Ghana and other developing countries sharing similar ESG structure and industry characteristics. The factors "communication effectiveness" (KPI 1), "conflict mitigation" (KPI 5), and "stakeholder support of project" (KPI 2) are associated with the nature of project relationship with the ESGs. Also, "smooth project facilitation" (KPI 4), "uncertainty and risk mitigation" (KPI 6), and "management monitoring and response" (KPI 3) are associated with the impact of the SM process on projects. The six KPIs adequately represent the mutual satisfaction level of ESGs at the PS of construction projects in Ghana (Oppong et al., 2017).

Usually at the commencement of projects, communication systems are outlined to determine what level and type of information, and by what means the information, will be transferred among stakeholders. The ESGs may use formal and informal channels to communicate with practitioners whiles making claims on projects or sharing opinions. The channels of communication used by the ESGs may include durbars, telephone calls, media and emails. In the course of planning the MWDP, there was misunderstanding and poor communication between the decision-makers and the ESGs as well as among the ESGs holding opposing views of project. For instance, there was poor communication between the local people who deemed the project to be necessary to solve the regular flooding and drought problems and the NGOs who were out to protect the biodiversity

from adverse project effects (IUCN 2015; Manowong and Ogunlana 2004). The effectiveness of communication has been manifested as a key indicator of client and customer satisfaction since it helps to boost project relationships with external stakeholder communities (Rashvand and Majid, 2014). Due to the amorphous and less-organised environment that the ESGs manifest, practitioners should adopt well-coordinated and feedback-oriented communication systems so that information transfer to and from ESGs could be monitored and evaluated appropriately.

ESGs are likely to accept project objectives and provide necessary support where their expectations and needs are considerately incorporated into the project requirement definition (Olander and Landin, 2008). Besides, positive response of the ESGs to stakeholder engagement exercises enhances the planning and management of project, and acceptance of project by the ESGs (Manowong and Ogunlana 2006). Despite the efforts of the government to implement the STX housing project by outlining potential benefits to the security agencies who were the proposed recipients, the media groups, general public, policy analyst groups, and opposition political representations considered the project to be misplaced priority and too expensive to be referred as "affordable housing". Over time, the government could not garner and sustain the support of the referred ESGs and abrogated the project contract accordingly (Owusu, 2012; Attobrah and Otchere-Darko, 2010). The level of support of the ESGs is an indication of their satisfaction in project (Rashvand and Majid 2014; Manowong and Ogunlana 2006).

Managers of some projects actively scan and intrude the ESE in search for issues that could affect projects. On other projects, the managers are passive and reactive only when issues arise in the ESE (Aaltonen and Sivonen, 2009). Essentially, practitioners must always track and understand the issues of ESGs through effectual engagement exercises (Wang, 2001; Bal et al., 2013). Besides, the real situations of ESGs who are impacted by the project ought to be monitored consistently.

This will be useful in ensuring that solutions are generated to maximize benefits and minimize burdens on the ESGs (Olander and Landin, 2008). The civil societal groups opposed the environmental health impact assessment results because they did not truly reflect the ex-post conditions of the ESGs affected by the MWDP (IUCN, 2015). Hence, monitoring and responding to the dynamic concerns of the ESGs is essential in knowing if they are satisfied.

Construction projects are very responsive to the (re-)actions and behaviours that the ESGs manifest in the PSE. As such, the SM process is anticipated to boost process and organisational efficiency in projects. The project efficiency may be in terms of the optimization of time and efforts to attain project expectations (Smith and Love, 2004). It is highly probable that project activities and schedules will run smoothly and meet targets where the ESG expectations and needs are managed well, and all objectionable (re-)actions and behaviours of ESGs on projects are curtailed (Olander and Landin, 2008; Mahato and Ogunlana, 2011). Although the RID had the impetus to execute the MWDP, some ESGs used undesirable approaches to make claims and gain attention of the RID. Consequently, the approaches adopted by the ESGs and numerous issues surrounding the MWDP stalled the planning for more than 30 years (IUCN, 2015). Therefore, the efficiency of project facilitation to meet targets is a measure of ESM performance and mutual satisfaction of ESGs.

Construction projects are full of conflicts and disputations emanating from the differing interests, multiplicity of stakeholders, and controversies surrounding projects (Oppong et al., 2018). Even though constructive conflicts are useful in project development, destructive conflicts are contrarily threatening for projects and so practitioners must use consensus building techniques to mitigate conflicts (Bal et al., 2013; Innes and Booher, 1999). The conflicting interests and needs of multi-stakeholder groups and ineffective resolution of disputes sufficiently led to the abrogation of the STX housing project prior to implementation in Ghana (Owusu, 2012). Many conflict mitigation

methods have been proposed in CEM research. For instance, the use of public participation exercises, monitoring and reporting programme, and compensation and resettlement programme will be effective in mitigating conflicts and disputes in large scale construction projects like dams (Mahato and Ogunlana, 2011). The extent to which conflict levels involving ESGs in project are mitigated may be indicative of ESM performance (Oppong et al., 2017).

The PS of projects is full of uncertainties as there may be lacking information on all important stakeholder groups, lack of detailed project requirement definition, and dynamic ESE. Meanwhile, uncertainties could generate risks and threats that may be unfavourable to projects. Accommodating the ESGs as early as possible in projects is needful to comprehend and curtail uncertainties and corresponding threats (Bal et al., 2013). Proactively, the responsible practitioners must consciously implement risk mitigation and management plans that are relevant to the ESGs early in projects. The extent to which uncertainties and risks are curtailed shows the performance of the ESM process in projects (Oppong et al., 2017).

The top-rated KPIs of ESM reveal some perceived complex interrelationships among them. For example, communicating effectively with the ESGs will expectedly also boost their support for project purpose. Additionally, curtailing conflicts, uncertainties and risks will likely keep project activities running smoothly to targeted levels. However, communicating effectively with the ESGs may not always cause stakeholders to support project purpose particularly where they sense that they are going to be adversely impacted. Similarly, project running smoothly in line with targets may be directly due to other reasons rather than just curtailing uncertainties, risks and conflicts. Accordingly, it will be prudent to consider each of the top KPIs to be unique so that independent scales could be engaged to assess the resultant mutual satisfaction of the ESGs (Mbachu and Nkado, 2006). The stated principle has been similarly applied in CEM studies for developing

partnering/relationship performance index (Yeung et al., 2007; 2009b) and alliance project team integration performance index (Ibrahim et al., 2013). In projects generally, cost, quality and time have significant interrelationships, e.g. increase in time is expected to somewhat increase cost of project due to inflation. However, the principle enables assessors to consider them as independent and develop unique measurement scales to assess the indicators separately in projects. In this study likewise, the six KPIs are regarded as independent of one another so that different QIs could be established for each KPI in a single assessment process.

At this stage of research, the model is conceptual and cannot be fully operationalised for assessing the performance level of ESM at the project PS objectively. Nevertheless, the linear model is flexible presently for practitioners to use measurement scales of choice to assess the performance level of ESM. At the next stage, appropriate QIs will be developed for each KPI to aid objective and realistic assessment of mutual external SS in construction projects.

8.2 INTERVIEW DIALOGUES: IDENTIFYING THE QUANTITATIVE INDICATORS

8.2.1 Analysis of Interview Dialogues

In order to properly and objectively assess the performance level of ESM in different projects, there is the need to establish QIs for the corresponding KPIs. Nine experts from the Panel One who were available were contacted in early July 2017 to suggest two QIs that could be used to evaluate each KPI through semi-structured interviews. Five of the experts were usually involved in private projects whiles four of them were also engaged mostly in public projects. The mix of private and public project experiences manifests that the outcomes of the interviews are balanced and credible for application in the GCI.

Prior to the suggestions, they were first requested to comment on the performance assessment model developed using the six KPIs in terms of (1) the number of top KPIs shortlisted, (2) the relative weightings assigned to the KPIs, and (3) the form of model adopted. Since it is very challenging to comprehensively identify and manage all ESGs at the project PS, all 9 experts generally agreed that the six KPIs are adequate to assess the ESM performance level. However, one expert still made argument that external "stakeholder empowerment" could be a good consideration, but not to displace any of the already established six KPIs. Hence, the experts contacted for the validation largely agreed that the model is adequate for assessing ESM performance. With regards to the weightings of KPIs, the experts generally responded that the weightings are appropriate given that the differences are minor in the model. Moreover, the experts particularly considered the model to be appropriate given that "communication effectiveness" was assigned the highest weighting. They see effective communication as the fundamental means of gaining the attention of ESGs and involving them in project development. On the form of the model, the experts commented that the adopted weighted linear additive model was simple and easy to operationalise in the industry. In effect, the model is a comprehensive tool to appropriately evaluate ESM performance in construction projects although it is still conceptual at this stage.

The nine experts were further asked to suggest two QIs that could be used to evaluate each KPI and demonstrate how the evaluation will be done. The experts were constrained to only suggest QIs that are important, measurable and obtainable so that they could be realistically applied in the assessment process (Ibrahim et al., 2015a). The transcripts of the interviews were analysed using open coding content analysis (Cavanagh, 1997). Similar texts identifying particular QIs were grouped under themes so that the researcher could represent them with generic well-defined QIs. The resultant list of QIs was then passed to the interviewees for verification prior to conducting

further survey and analysis. The experts confirmed that the generic well-defined QIs captured corresponded with their suggestions. In general, 20 QIs were identified for the six KPIs through the semi-structured interviews with the nine experts (Tables 8.6 and 8.7).

Table 8.6 Proposed quantitative indicators (QIs) for the KPIs of ESM

	Quantitative indicators (QIs)	**Interviewees**									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**T**
	KPI 1: Communication effectiveness										
QI 1	Perception-based assessment of communication effectiveness by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	❖	❖	❖	❖		❖	❖		❖	7
QI 2	Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.		❖	❖		❖		❖	❖	❖	6
QI 3	Percentage of timely feedback on provided/received information and enquiries to/from external stakeholder groups (i.e. meeting agreed schedule e.g. 2 weeks).	❖			❖	❖					3
	KPI 2: Stakeholder support of project										
QI 1	Percentage of specific practice suggestions made by external stakeholder groups that have been adopted in whole or part.	❖	❖								2
QI 2	Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	❖	❖	❖		❖			❖	❖	6
QI 3	Extent of project delay due to external stakeholder protest/controversy (percentage of projected planning stage time).			❖				❖			2
QI 4	Percentage of representatives of identified external stakeholder groups who are in support of project purpose and objectives.				❖		❖				2
	KPI 3: Management monitoring and response										
QI 1	Average time taken to address the requirements of external stakeholders (in terms of weeks).	❖	❖	❖				❖			4
QI 2	Percentage of external stakeholder group requirements that have been considered or fulfilled in project.	❖		❖		❖		❖	❖	❖	6
QI 3	Perception-based assessment of management monitoring and response by key stakeholders using Likert scale (e.g. scoring from very poor to very good).		❖	❖						❖	3
QI 4	Frequency of monitoring and evaluating external stakeholder requirements fulfilment in project progress [e.g. through meetings, opinion polls etc.] (average in terms of weeks).				❖	❖	❖				3

Note: Interviewees 1, 2, 3, 6 and 8 were usually involved in private sector project, whiles interviewees 4, 5, 7 and 9 were also greatly involved in public sector projects.
T= Total count for each row.

8.2.2 Quantitative Indicators for Communication Effectiveness

Table 8.6 presents the proposed QIs for measuring communication effectiveness (KPI 1) in projects. Seven experts proposed the use of perception-based scoring of communication effectiveness by key stakeholders using Likert scale. This suggestion is in line with Yeung et al.

(2008; 2009a) and Oppong et al. (2017). This QI seems necessary because it may be difficult at times to obtain relevant data on information transfer to and from ESGs at the project PS. The ESE is very amorphous and least organised especially at the PS of projects. Additionally, six experts suggested measuring the information feedback as a ratio of the total information transfer to and from ESGs. The QI 2 has been proposed to measure effectiveness of communication with stakeholders (ASTSWMO, 2011; SKM, 2012). The QI 3 suggested further imposes time duration on the information feedback obtained from ESGs or given to them (SKM, 2012).

8.2.3 Quantitative Indicators for Stakeholder Support of Project

The QIs proposed by the interviewees for assessing ESGs' support of project are shown in Table 8.6. The experts mainly proposed the use of perception-based Likert scale to assess the support of ESGs for projects (Chan and Chan, 2004). Similarly, the experts see this KPI to be very subjective and hence, a Likert scale would be much better means of assessment. Besides, the experts think that the QIs [1] "percentage of specific practice suggestions made by ESGs that have been adopted in whole or part" (DIC, 2008), [2] "extent of project delay due to external stakeholder protest/controversy" (ASTSWMO, 2011), and [3] "percentage of representatives of identified ESGs who are in support of project purpose and objectives" (Larson and Williams, 2009), should be considered for assessing the ESM performance in terms of ESGs' support of project.

8.2.4 Quantitative Indicators for Management Monitoring and Response

Four QIs were suggested by the experts to evaluate management monitoring and response, and they are indicated in Table 8.6. Six experts perceived that "percentage of ESG requirements that have been considered or fulfilled in project" will be appropriate to evaluate KPI 3 in line with SKM (2012). The next most common QI is "average time taken to address the requirements of external stakeholders" (SKM, 2012). The experts regarded the speed with which PMs consider and

address ESG requirements to be very indicative of their monitoring and response to the dynamic ESE. Subjective Likert scale assessment and the frequency of monitoring and evaluating ESGs' requirements fulfilment in project progress were also proposed by experts.

Table 8.7 Proposed quantitative indicators (QIs) for the KPIs of ESM (cont'd)

	Quantitative indicators (QIs)	**Interviewees**									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**T**
	KPI 4: Smooth project facilitation										
QI 1	Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder).	❖	❖	❖	❖		❖	❖			6
QI 2	Percentage of decisions readdressed due to lack of collaboration with the external stakeholders.	❖			❖					❖	3
QI 3	Perception-based assessment of efficiency of project facilitation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).		❖	❖		❖			❖	❖	5
	KPI 5: Conflict mitigation										
QI 1	Average number of disputes and disagreements occurrence related to external stakeholder groups per period (e.g. monthly, quarterly etc.).	❖	❖		❖					❖	4
QI 2	Percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	❖		❖	❖	❖	❖	❖	❖		7
QI 3	Perception-based assessment of conflict mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).		❖	❖						❖	3
	KPI 6: Uncertainty and risk mitigation										
QI 1	Perception-based assessment of uncertainty and risk mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	❖	❖	❖	❖	❖	❖	❖	❖	❖	9
QI 2	Ratio of unplanned risk occurrences to planned potential risk events related to external stakeholder groups.	❖		❖							2
QI 3	Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making.				❖						1

Note: Interviewees 1, 2, 3, 6 and 8 were usually involved in private sector project, whiles interviewees 4, 5, 7 and 9 were also greatly involved in public sector projects.
T= Total count for each row.

8.2.5 Quantitative Indicators for Smooth Project Facilitation

Table 8.7 presents the QIs perceived by experts for assessing smooth facilitation of the project development process. Because the project planning may be broken down into deadlines and milestones, majority of experts suggested that the "percentage of deadlines met due to collaboration with the external stakeholders" could represent the quality of project facilitation (ASTSWMO, 2011). Aside, five experts largely consented that questionnaire survey could be conducted on key stakeholders to evaluate their satisfaction with respect to the efficiency of project

facilitation. Additionally, a third of experts recommended that the "percentage of decisions readdressed due to lack of collaboration with the external stakeholders" will serve as a good measure of smooth project facilitation.

8.2.6 Quantitative Indicators for Conflict Mitigation

The recommended QIs to measure the level of conflict mitigation with ESGs are shown in Table 8.7. Most of the experts perceived the "percentage of disputes and disagreements involving ESGs that have been comprehensively resolved" as an important QI of conflict mitigation. This QI was also implied by DIC (2008) claiming that no notable conflicts should occur among key stakeholders without being resolved. Aside, four experts considered the "average number of disputes and disagreements occurrence related to ESGs per period" as an evaluation method of conflict mitigation. Similar to other KPIs, three experts perceive that subjective Likert scale assessment of conflict mitigation will be appropriate where other forms of data may not be available altogether or within time.

8.2.7 Quantitative Indicators for Uncertainty and Risk Mitigation

The QIs of the KPI 6 are also indicated in Table 8.7. All the experts considered the perception-based Likert scale assessment as the best method to evaluate the mitigation level of uncertainties and risks related to ESGs at project PS (Chan and Chan, 2004). The general argument made was that it will be difficult to assess the uncertainty and risk mitigation level where the number of risk items may be unknown at the PS of project. Besides, a few experts proposed the "ratio of unplanned risk occurrences to planned potential risk events related to ESGs" as a useful QI to evaluate the KPI 6. Moreover, an expert suggested the QI "percentage of identified ESGs that are averagely represented in project meetings/decision-making". The underlying assumption was that

once the identified ESGs are involved in project meetings and decision-making, their requirements would have been incorporated and that will minimize uncertainties and risks related to them.

After identifying the list of potential 20 QIs through semi-structured interviews with experts, it is needful to further establish the most vital QI to evaluate each corresponding KPI.

8.3 THREE ROUNDS OF DELPHI SURVEY: ESTABLISHING THE BEST QUANTITATIVE INDICATORS AND RANGES

8.3.1 Profile of Experts on Panel Two

The Panel 2 was composed of 22 different consulting experts working in the GCI. The profile of the panellists is presented in Table 8.8. The experts invited were from different professional backgrounds and had balanced experiences in public and private sector projects, and building and civil projects. Also, more than 50 percent of the panellists had 10 years or more experience in managing, engaging or relating with ESGs in construction project development in the GCI. The panel size of 22 compares well with other similar CEM studies like Ibrahim et al. (2015a) that used 17 experts. The mix profile of experts increases the generalisability and credibility of findings.

Table 8.8 Profile of experts on panel two

Respondents' profile	**N**	**%**	**Respondents' profile**	**N**	**%**	**Respondents' profile**	**N**	**%**
Professional background			*Level of experience (Years)*			*Sector of project client*		
Engineer	5	22.73	6 to 10	8	36.36	Public	7	31.82
Architect	5	22.73	11 to 15	4	18.18	Private	6	27.27
Quantity Surveyor	6	27.27	16 to 20	5	22.73	Both	9	40.91
Project/Construction Manager	6	27.27	Above 20	5	22.73	*Total*	*22*	*100.00*
Total	*22*	*100.00*	*Total*	*22*	*100.00*			
Position in organisation						*Nature of project*		
Project/Construction Manager/Engineer/Quantity Surveyor/Architect				9	40.91	Building work	12	54.55
Senior Project/Construction Manager/Engineer/Quantity Surveyor/Architect				6	27.27	Civil work	10	45.45
Director/CEO				7	31.82	*Total*	*22*	*100.00*
Total				*22*	*100.00*			

8.3.2 Round Four of Delphi Survey: Rating of the Identified QIs for Assessing the KPIs

8.3.2.1 Format

The questionnaires with similar invitation letter were issued to the identified 22 consulting experts around July ending 2017 by hand personally at their offices or through email per the preference of experts. In the invitation letter, the researcher provided summary of the scope of study, the sub-objectives that have been achieved, the definitions of the selected KPIs, and the findings until then. The purpose of this action was to ensure a smooth transition between the two different panels in providing the best information for the study. The new set of experts understood the research process thus far and were willing to contribute the necessary data at the subsequent stage of the study. The panellists were requested to score the appropriateness/suitability of the individual QIs based on three criteria: (1) Importance—how important the QI is in assessing the corresponding KPI; (2) Measurability—how measurable is the QI in assessing the corresponding KPI; and (3) Obtainability—how obtainable is the data for the QI in assessing the corresponding KPI. The researcher adopted the bipolar scale introduced by Yeung et al. (2008). The importance, measurability and obtainability levels were rated using the five-point Likert scales 1= "very unimportant", or "very difficult to measure and obtain" to 5= "very important", or "very easy to measure and obtain". The experts were offered opportunity to propose more appropriate QIs if assessed to be suitable according to their experiential knowledge in the GCI. Those practitioners who could not return the filled questionnaires on time were reminded through emails, calls and visits to their offices. By the end of August 2017, all the 22 experts returned the questionnaires to the researcher.

8.3.2.2 Analysis and Results

Analysis was conducted on the 22 experts' responses from the Round 4 and the results are presented in Tables 8.9 and 8.10. The overall mean ratings indicate the appropriateness level of the QIs relative to the corresponding KPIs. The respective top-rated individual QIs for communication effectiveness, stakeholder support of project, and management monitoring and response in the Round 4 are: "QI 2—percentage of feedback on provided/received information and enquiries to/from ESGs" (mean= 4.44), "QI 2—perception-based assessment of external stakeholder support by key stakeholders using Likert scale" (mean= 4.00), and "QI 2—percentage of ESG requirements that have been considered or fulfilled in project" (4.03).

With regards to the KPIs smooth project facilitation, conflict mitigation, and uncertainty and risk mitigation, the respective most appropriate QIs are as follows: "QI 1—percentage of deadlines met due to collaboration with the external stakeholders" (mean= 4.12), "QI 1—average number of disputes and disagreements occurrence related to ESGs per period" (mean= 4.15), and "QI 3—percentage of identified ESGs that are averagely represented in project meetings/decision-making" (mean= 4.17).

Even though the experts were encouraged to make new suggestions, no new QIs were suggested and rated by the experts. The implication is that the experts perceived the QIs provided by the previous panellists as adequate to evaluate the respective KPIs of ESM in the GCI. It can be inferred that there is proper cooperation and uniform understanding between the experts of the two separate panels with regard to the Delphi survey objectives.

Table 8.9 Mean scores of the QIs by practitioners in the round 4

	Proposed quantitative indicators (QIs) for each KPI	Round 4			
		Imp.	**Mes.**	**Obt.**	**Mn.**
	KPI 1: Communication effectiveness				
QI 1	Perception-based assessment of communication effectiveness by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.55	3.73	4.05	4.11
QI 2	Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.	4.23	4.45	4.64	**4.44**
QI 3	Percentage of timely feedback on provided/received information and enquiries to/from external stakeholder groups (i.e. meeting agreed schedule e.g. 2 weeks).	4.14	3.91	3.55	3.86
	KPI 2: Stakeholder support of project				
QI 1	Percentage of specific practice suggestions made by external stakeholder groups that have been adopted in whole or part.	4.27	2.95	2.95	3.39
QI 2	Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.14	3.95	3.91	**4.00**
QI 3	Extent of project delay due to external stakeholder protest/controversy (percentage of projected planning stage time).	3.82	3.23	3.14	3.39
QI 4	Percentage of representatives of identified external stakeholder groups who are in support of project purpose and objectives.	4.05	3.32	3.91	3.76
	KPI 3: Management monitoring and response				
QI 1	Average time taken to address the requirements of external stakeholders (in terms of weeks).	4.18	3.68	3.32	3.73
QI 2	Percentage of external stakeholder group requirements that have been considered or fulfilled in project.	4.18	4.05	3.86	**4.03**
QI 3	Perception-based assessment of management monitoring and response by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.68	3.68	2.95	3.44
QI 4	Frequency of monitoring and evaluating external stakeholder requirements fulfilment in project progress [e.g. through meetings, opinion polls etc.] (average in terms of weeks).	3.82	3.68	4.00	3.83
	Kendall's (W)			*0.254*	
	Level of significance			*0.000*	

Note: Imp.= importance, Mes.= measurability, Obt.= obtainability, and Mn.= mean.

In order to ascertain the agreement level of responses in the Round 4, the Kendall's (*W*) was computed. The Kendall's (*W*) value obtained is 0.254 and it is significant ($p = 0.000$). The value is close to Yeung et al. (2008) that obtained about 0.290 at a similar stage of Delphi. Therefore, there is significant consistency and consensus among the responses of experts in the Round 4.

Table 8.10 Mean scores of the QIs by practitioners in the round 4 (cont'd)

	Proposed quantitative indicators (QIs) for each KPI	Round 4			
		Imp.	**Mes.**	**Obt.**	**Mn.**
	KPI 4: Smooth project facilitation				
QI 1	Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder).	4.32	3.95	4.09	**4.12**
QI 2	Percentage of decisions readdressed due to lack of collaboration with the external stakeholders.	4.05	3.59	3.64	3.76
QI 3	Perception-based assessment of efficiency of project facilitation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.77	3.41	3.05	3.41
	KPI 5: Conflict mitigation				
QI 1	Average number of disputes and disagreements occurrence related to external stakeholder groups per period (e.g. monthly, quarterly etc.).	4.32	4.00	4.14	**4.15**
QI 2	Percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	4.18	4.00	3.91	4.03
QI 3	Perception-based assessment of conflict mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.77	3.50	4.14	3.80
	KPI 6: Uncertainty and risk mitigation				
QI 1	Perception-based assessment of uncertainty and risk mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.14	3.68	3.82	3.88
QI 2	Ratio of unplanned risk occurrences to planned potential risk events related to external stakeholder groups.	4.14	3.09	3.36	3.53
QI 3	Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making.	4.27	4.18	4.05	**4.17**
	Kendall's (W)			*0.254*	
	Level of significance			*0.000*	

Note: Imp.= importance, Mes.= measurability, Obt.= obtainability, and Mn.= mean.

8.3.3 Round Five of Delphi Survey: Re-rating of the Identified QIs for Assessing the KPIs

8.3.3.1 Format

In the Round 5, the questionnaires were issued to the 22 experts at the beginning of September 2017 by hand personally at their offices or through email as the experts preferred. The practitioners were handed the consolidated results from the previous round comprising the overall mean scores (importance, measurability and obtainability), Kendall's (*W*) result, and the individual ratings of each expert correspondingly. Each panellist was requested to re-rate (confirm or change) all the 20 QIs based on the consolidated feedback of all experts provided. Less than half of the experts had returned the duly filled questionnaires by the given deadline. Hence, the experts who were yet to return questionnaires were followed up through email, personal visits and phone calls. By the

end of September 2017, all experts except one returned the completed questionnaires. The expert who pulled out became too busy and could not continue with the Delphi process.

8.3.3.2 Analysis and Results

The analysis results obtained from the 21 responses after the Round 5 are shown in Tables 8.11 and 8.12. The composite mean scores indicate how appropriate/suitable each QI is in terms of assessing the respective KPI of ESM performance in the GCI. For communication effectiveness, the most appropriate QI is "QI 2—percentage of feedback on provided/received information and enquiries to/from ESGs" with mean rating of 4.41. Meanwhile, "QI 3—percentage of timely feedback on provided/received information and enquiries to/from ESGs" was rated least appropriate (mean= 3.98).

With regard to stakeholder support of project, the top-rated mean score of 4.37 was attained by the "QI 2—perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good)". In this same group, the least rated QI was "QI 3—extent of project delay due to external stakeholder protest/controversy (percentage of projected PS time)" with mean rating of 3.62.

According to the results, management monitoring and response will be most appropriately assessed using "QI 2—percentage of ESG requirements that have been considered or fulfilled in project" (mean= 4.14). On the other hand, "QI 3—perception-based assessment of management monitoring and response by key stakeholders using Likert scale (e.g. scoring from very poor to very good)" (mean= 3.54) was the least appropriate quantitative evidence of KPI 3.

Table 8.11 Mean scores of the QIs by practitioners in the round 5

	Proposed quantitative indicators (QIs) for each KPI	Round 5			
		Imp.	**Mes.**	**Obt.**	**Mn.**
	KPI 1: Communication effectiveness				
QI 1	Perception-based assessment of communication effectiveness by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.43	3.95	3.90	4.10
QI 2	Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.	4.38	4.48	4.38	**4.41**
QI 3	Percentage of timely feedback on provided/received information and enquiries to/from external stakeholder groups (i.e. meeting agreed schedule e.g. 2 weeks).	4.10	4.14	3.71	3.98
	KPI 2: Stakeholder support of project				
QI 1	Percentage of specific practice suggestions made by external stakeholder groups that have been adopted in whole or part.	4.29	3.29	3.43	3.67
QI 2	Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.48	4.57	4.05	**4.37**
QI 3	Extent of project delay due to external stakeholder protest/controversy (percentage of projected planning stage time).	3.81	3.62	3.43	3.62
QI 4	Percentage of representatives of identified external stakeholder groups who are in support of project purpose and objectives.	3.95	4.19	4.05	4.06
	KPI 3: Management monitoring and response				
QI 1	Average time taken to address the requirements of external stakeholders (in terms of weeks).	4.33	3.90	3.57	3.94
QI 2	Percentage of external stakeholder group requirements that have been considered or fulfilled in project.	4.24	4.24	3.95	**4.14**
QI 3	Perception-based assessment of management monitoring and response by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.76	3.90	2.95	3.54
QI 4	Frequency of monitoring and evaluating external stakeholder requirements fulfilment in project progress [e.g. through meetings, opinion polls etc.] (average in terms of weeks).	3.81	3.24	4.00	3.68
	Kendall's (W)			*0.315*	
	Level of significance			*0.000*	

Note: Imp.= importance, Mes.= measurability, Obt.= obtainability, and Mn.= mean.

Considering smooth project facilitation, the highest rated QI is "QI 1—percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholders)" (mean= 4.00). Contrarily, the least rated QI is "QI 3—perception-based assessment of efficiency of project facilitation by key stakeholders using Likert scale (e.g. scoring from very poor to very good)" with mean score of 3.37.

In line with conflict mitigation, "QI 2—percentage of disputes and disagreements involving ESGs that have been comprehensively resolved" was rated highest (mean= 4.33). The QI 2 replaced "QI

1—average number of disputes and disagreements occurrence related to ESGs per period" from the Round 4. Besides, "QI 3—perception-based assessment of conflict mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good)" was the least rated QI (mean= 3.70).

Table 8.12 Mean scores of the QIs by practitioners in the round 5 (cont'd)

	Proposed quantitative indicators (QIs) for each KPI	Round 5			
		Imp.	**Mes.**	**Obt.**	**Mn.**
	KPI 4: Smooth project facilitation				
QI 1	Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholders).	4.19	4.05	3.76	**4.00**
QI 2	Percentage of decisions readdressed due to lack of collaboration with the external stakeholders.	3.81	3.71	3.48	3.67
QI 3	Perception-based assessment of efficiency of project facilitation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.67	3.38	3.05	3.37
	KPI 5: Conflict mitigation				
QI 1	Average number of disputes and disagreements occurrence related to external stakeholder groups per period (e.g. monthly, quarterly etc.).	4.05	4.52	4.14	4.24
QI 2	Percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	4.48	4.48	4.05	**4.33**
QI 3	Perception-based assessment of conflict mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.71	3.81	3.57	3.70
	KPI 6: Uncertainty and risk mitigation				
QI 1	Perception-based assessment of uncertainty and risk mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.00	3.95	3.76	3.90
QI 2	Ratio of unplanned risk occurrences to planned potential risk events related to external stakeholder groups.	3.62	2.81	2.67	3.03
QI 3	Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making.	4.52	4.10	4.48	**4.37**
	Kendall's (W)			*0.315*	
	Level of significance			*0.000*	

Note: Imp.= importance, Mes.= measurability, Obt.= obtainability, and Mn.= mean.

The last KPI (uncertainty and risk mitigation) can be most appropriately evaluated by using the "QI 3—percentage of identified ESGs that are averagely represented in project meetings/decision-making" (mean= 4.37). On the other hand, the least appropriate QI to evaluate KPI 6 is "QI 2—ratio of unplanned risk occurrences to planned potential risk events related to ESGs" (mean= 3.03). The summary of the most appropriate QIs for the respective KPIs is found in Table 8.13.

Table 8.13 Summary of the KPIs and the selected QIs

KPI	Selected quantitative indicator (QI)	Mean
KPI 1: Communication effectiveness	QI 2: Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups	4.41
KPI 2: Stakeholder support of project	QI 2: Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good)	4.37
KPI 3: Management monitoring and response	QI 2: Percentage of external stakeholder group requirements that have been considered or fulfilled in project	4.14
KPI 4: Smooth project facilitation	QI 1: Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholders)	4.00
KPI 5: Conflict mitigation	QI 2: Percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved	4.33
KPI 6: Uncertainty and risk mitigation	QI 3: Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making	4.37

The Kendall's (*W*) was used to measure the consensus level of the experts' responses in the Round 5. The Kendall's (*W*) value attained was 0.315, and this is significant ($p < 0.05$). By comparing the Kendall's (*W*) values in the Rounds 4 and 5 of Delphi, it can be deduced that the consensus level of experts improved by about 24% in the Round 5 given the Round 4 as base value. As the consensus level and accuracy of findings are expected to increase with increasing survey rounds (Hallowell and Gambatese, 2010), it can be assumed that adding more survey rounds at this stage would increase the experts' consensus in the study. However, considering the potential of high attrition rates, fatigue of experts, and resource limitations (Hasson et al., 2000), it is reasonable to avoid excess rounds given the significant evidence of improved consensus among experts.

8.3.4 Round Six of Delphi Survey: Assigning Performance Grades to the QIs

8.3.4.1 Format

On a single percentage scale of a QI (e.g. QI 2 of communication effectiveness), different assessors could assign varying values to very good performance. For instance, whiles an assessor may say 60% of feedback represents very good performance, another may state 90% for the same. The implication is that there will be a lot of subjectivity in assessing ESM performance (i.e. mutual satisfaction level) by using same KPIs and corresponding QIs in the GCI. Hence, there was a need

to conduct a final questionnaire survey on the panel of experts to assign expected figures to different performance levels. In the Round 6 (questionnaires issued at the beginning of October 2017), the 21 experts remaining on the panel were requested to indicate the percentages or scores that will be expected for five bipolar performance grades of 1= very poor performance to 5= very good performance. The bipolar scale usually has opposing attributes on the same scale (Schwarz, 1996). The bipolar scale was adopted because it is believed that stakeholders could either be satisfied or unsatisfied in projects based on whether the SM process is poorly or excellently executed. In fact, Chan and Chan (2004) also suggested a bipolar scale to evaluate cognitive attributes of projects. Reminders were conducted on the experts through phone calls, personal visits to offices, and emails. By the ending of October 2017, only 12 experts returned completed questionnaires. Nine experts further pulled out due to busy job schedules. As such, only about 55% of experts completed the final round. Nevertheless, this is adequate when compared with Yeung et al. (2009b) that completed the final round with 36% response rate.

8.3.4.2 Analysis and Results

In order to determine the mutually acceptable ESM performance levels from the experts, mean scores and SD values were computed and presented in Table 8.14. The mean values serve as a quick guideline indicating the differences in performance levels. For instance, the average and good performance levels of conflict mitigation are represented by the mean values 53.75% and 71.25% respectively. The results also show that statistical differences exist in the opinions of the experts at each performance level based on the SD values. It can be observed that the SD values are particularly not too high (less than 10% or the equivalent ratio) except for the very poor and poor performance levels of management monitoring and response with SD values of 11.45% and 10.54% correspondingly. The SD values obtained compare very well with Ibrahim et al. (2015b)

who attained SD values up to about 18% or the equivalent ratio. Thus, it can be generally inferred that there is agreement among the experts with regards to the scores assigned to the performance levels. Substantially, the sample and estimation in the modelling are considered adequate and appropriate.

Table 8.14 Mean values and standard deviations of the expected performance levels of QIs

Performance levels of KPIs	**VPP**		**PP**		**AP**		**GP**		**VGP**	
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
KPI 1: Communication effectiveness (QI 2)	17.50	8.66	34.17	9.25	52.08	6.56	66.25	8.29	77.50	7.54
	< 25.83		≥25.83 to <43.13		≥ 43.13 to < 59.17		≥ 59.17 to < 71.88		≥71.88	
KPI 2: Stakeholder support of project (QI 2)	1.75	0.62	3.17	0.83	5.25	0.62	6.67	0.78	8.04	0.81
	< 2.46		≥ 2.46 to <4.21		≥ 4.21 to < 5.96		≥ 5.96 to < 7.35		≥ 7.35	
KPI 3: Management monitoring and response (QI 2)	20.83	11.45	37.92	10.54	53.75	7.42	70.83	9.00	83.33	7.49
	< 29.38		≥ 29.38 to < 45.83		≥ 45.83 to < 62.29		≥62.29 to < 77.08		≥ 77.08	
KPI 4: Smooth project facilitation (QI 1)	16.25	6.78	32.50	7.83	47.08	6.56	64.58	9.88	78.33	9.61
	< 24.38		≥ 24.38 to < 39.79		≥ 39.79 to < 55.83		≥ 55.83 to < 71.46		≥ 71.46	
KPI 5: Conflict mitigation (QI 2)	19.58	8.65	34.17	7.64	53.75	4.83	71.25	6.44	84.17	8.75
	< 26.88		≥ 26.88 to < 43.96		≥ 43.96 to < 62.50		≥ 62.50 to < 77.71		≥ 77.71	
KPI 6: Uncertainty and risk mitigation (QI 3)	22.50	8.66	40.00	8.26	54.17	8.21	69.17	8.21	80.42	8.65
	< 31.25		≥ 31.25 to < 47.09		≥ 47.09 to < 61.67		≥ 61.67 to < 74.80		≥ 74.80	
Number (n)	*12*									

Note: VPP= "very poor" performance, PP= "poor" performance, AP= "average" performance; GP= "good" performance; and VGP= "very good" performances. Also, M= mean, and SD= standard deviation.
Note: Except for KPI 2 that has Likert scores assigned, all the other KPIs are in percentages.

In response to the observed deviations in experts' perceptions, it is of necessity to define more accurate and reasonable QRs for the QIs in assessing ESM performance (Yeung et al., 2008; Chow and Ng, 2007). Accordingly, the averages of the mean values between successive performance levels were computed to serve as the termination point for the performance ranges. For instance, the average of the two successive means for QI 2 of communication effectiveness (17.50% and 34.17%) is 25.83%. Hence, any feedback percentage on information transfer to/from ESGs that is below 25.83% will be considered as "very poor" communication performance. Any feedback

percentage that ranges from 25.83% to below 43.13% will also be assessed as poor communication performance.

8.3.5 Discussion of Results

After the subsequent three Delphi survey rounds have been conducted on the experts, individual top-rated QIs and QRs have been established to appropriately assess the performance levels of the six KPIs. The QI 2 for evaluating communication effectiveness "percentage of feedback on provided/received information and enquiries to/from ESGs" has literature support including ASTSWMO (2011) and SKM (2012). The feedback system will be very useful where all communication channels are clearly defined to the ESGs early in project. The information transfers could be tracked through correspondences (emails and posts), surveys, telephone/phone call records, and minutes of meetings with ESGs. Besides, the Likert scale has been proposed by Chan and Chan (2004) to measure KPIs where there is difficulty in getting other forms of data or where the assessment of the KPIs is subjective in nature. Stakeholder support of project may be unpredictable and fuzzy in nature, and hence, there will be the need to use a Likert scale in assessing it.

Generally, most ESGs would feel somewhat satisfied where their expectations and needs are considered in the project development process. The "percentage of ESG requirements that have been considered or fulfilled in project" has been implied in literature (SKM, 2012). The requirements of ESGs could change over time due to the dynamics of the ESE. Therefore, practitioners should be able to properly document all requirements pursued by the ESGs so that the extent of fulfilment could be monitored. Additionally, Smooth project facilitation will properly be evaluated by the QI "percentage of deadlines met due to collaboration with the external stakeholders" (ASTSWMO, 2011). Practitioners should take note that not all the deadlines

(timelines or milestones) at the PS of project may relate directly to ESGs. Hence, only the related timelines should be used as the basis for the ratio computation.

Conflicts abound in projects where there are numerous stakeholders, different expectations, and even controversies (Oppong et al., 2018). Conflict is seen as the level of disagreement or dispute among the stakeholders in projects. Hence, it is reasonable to assess conflict mitigation using "percentage of disputes and disagreements involving ESGs that have been comprehensively resolved". DIC (2008) argued that in a project where conflict is properly mitigated, there should not be any significant conflicts among stakeholders which are not being resolved. Furthermore, the PS of projects is full of uncertainties due to limited information on different project issues. The level of uncertainty and risk mitigation at project PS should be appropriately assessed using the "percentage of identified ESGs that are averagely represented in project meetings/decision-making". Assessors should note that only the number of social/technical meetings that identified ESGs are expected to be represented should be used in computing the average representation ratios.

At this stage of research, the performance assessment system could be rendered as fully operational. The oversimplified mean ranges could serve as basic guideline in differentiating between ESM performance levels. However, it will be more appropriate to use a proven systematic and scientific method that considers the subjectivity and fuzziness in the natural human thought process. Hence, the FST will be adopted in the subsequent major section to incorporate the vagueness of the human thought process in defining more accurate QRs of the QIs for the five performance levels. Accurately defined QRs of the QIs will help assessors to conduct ESM performance (i.e. mutual satisfaction) evaluation objectively, reliably and realistically on different projects.

8.3.6 Validation of Findings

The outcomes of the Delphi technique have been validated. This is because the Delphi method is a self-validating process where feedback information is provided as reference for the experts to alter or affirm their opinions in the subsequent round(s). The semi-structured interviews and six-round survey were designed and undertaken strategically so that the most appropriate and least biased data could be collected from the panellists. This guaranteed that the outcomes are credible, least subjective and significant for enhancing ESG consideration and corresponding mutual satisfaction assessment in construction projects of Ghana.

8.4 FUZZY SET THEORY APPROACH: CALIBRATING THE SCALES OF THE BEST QUANTITATIVE INDICATORS

8.4.1 Developing Fuzzy Membership Functions for the Quantitative Indicators

The purpose of this section is to develop respective QRs for the most appropriate QIs of the KPIs in a systematic manner. The QRs will clearly define five bipolar performance degrees i.e. “very poor”, “poor”, “average”, “good” and “very good” to help systematically and objectively assess ESM performance (i.e. mutual satisfaction) at the construction project PS. The seven steps stated in Chapter 2 of the study were followed in developing the MFs for the QIs.

8.4.1.1 Establishment of the Best Quantitative Interpretation for the KPIs

In the previous Section 8.3, the most appropriate QIs of the KPIs have been established through semi-structured interviews and 2 rounds of Delphi survey. The list of the selected QIs of the KPIs is indicated in Table 8.13.

8.4.1.2 Quantification of the Fuzzy Quantitative Indicators

In the concluding survey of the Delphi process, the practitioners assigned numerical values (percentages or scores) (f_0) for each QI in terms of the bipolar performance degrees i.e. "very poor", "poor", "average", "good", and "very good". Out of the 21 experts surveyed, only 12 responded by assigning the values to the QIs. It is very common for experts to drop from further survey rounds due to fatigue (Hasson et al., 2000). Nevertheless, the sample of 12 experts who participated in the final round is comparable to previous studies. For example, in a similar stage of Delphi study, Yeung et al. (2012) obtained 12 responses and Ibrahim et al. (2015b) retrieved 17 responses from the experts. Since only triangular and trapezoidal MFs are adopted, the 12 responses are adequate to model the ESM performance quite accurately.

In this demonstration, the expected values for "poor" performance of conflict mitigation in terms of "percentage of disputes and disagreements involving ESGs that have been comprehensively resolved" (QI 2) will be used. Table 8.15 shows the values assigned by each of the 12 experts to "poor" performance of Q1 2.

Table 8.15 Experts' value assignment to poor performance of conflict mitigation (QI 2)

Expert	1	2	3	4	5	6	7	8	9	10	11	12
Expectations for poor performance of Q1 2 (%)	30	40	40	20	30	50	30	40	30	35	30	35

8.4.1.3 Identification of the "X" and "A" Values of the Fuzzy MFs

The "*X*" and "*A*" values are the typical compositions of fuzzy MFs. The "X" values are those in the universe of discourse and define the fuzzy set, whiles the "A" values indicate the extent of membership in the corresponding fuzzy set. Prior to determining the "*X*" and "*A*" values, the number of bands (*k*) was computed using equation (2.9).

$$k = 1.87(12 - 1)^{\frac{2}{5}} = 4.88$$

The *N* substituted into the equation (2.9) is the total number of experts who assigned values to the performance levels (12). By rounding the figure off, 5 bands should be used to categorise the values assigned by the experts and the respective membership degrees (Bharathi-Devi and Sarma, 1985). The least and largest values in Table 8.15 are 20% and 50% respectively. Hence, the overall range of 30% was divided by the number of bands (k = 5). In effect, the five bands delineated to determine the MFs for "poor" performance of conflict mitigation are 20%—26%, 26%—32%, 32%—38%, 38%—44%, and 44%—50%. Afterward, the total count of assigned values enclosed within each band was identified. The "*X*" values were computed by taking the averages of the values falling within respective bands (Yeung et al., 2012). Before computing the "*A*" values, the highest among the number of values falling within respective bands was identified (5). The equation (2.10) was then adopted to compute the "*A*" values (Ng et al., 2002). Since the highest number will always be the denominator, this computation constrains the MFs to go through the full membership value of 1. All the computed Std (A_i) values were lower than their corresponding (A_i) values. This implies that the estimated memberships of the values are acceptable (Yeung et al., 2012). All the results of the computations are presented in Table 8.16.

Table 8.16 "*X"* and "*A"* values for poor performance of conflict mitigation (QI 2)

Band	Range (%)	Number of values within each band	Computation for each value of X_i (%)	Computation for each value of A_i	Std (A_i)
1	20 to 26	1	$20\%/1 = 20\%$	$1/5 = 0.200$	0.0092
2	26 to 32	5	$(30\% \times 5)/5 = 30\%$	$5/5 = 1.000$	0.0000
3	32 to 38	2	$(35\% \times 2)/2 = 35\%$	$2/5 = 0.400$	0.0123
4	38 to 44	3	$(40\% \times 3)/3 = 40\%$	$3/5 = 0.600$	0.0113
5	44 to 50	1	$50\%/1 = 50\%$	$1/5 = 0.200$	0.0092

8.4.1.4 Formulation of the Fuzzy Membership Function Graphs

The acceptable fuzzy MFs derived from the computations are presented in Table 8.17. Based on the "*X*" and "*A*" values, scatter diagrams of the MFs were plotted. The "*X*" values were plotted along the horizontal axis and the "*A*" values were plotted along the vertical axis. Straight regression lines of best-fit were constructed through the full membership points by using the BEM (Yeung et al., 2012). Both *Microsoft Excel 2013* and *MATLAB R2015a* were complementarily engaged in constructing the lines of best-fit. The best-fit lines for the "poor" performance level of conflict mitigation (QR 2) are demonstrated in Figure 8.1. In this case, the fuzzy MFs of "poor" performance level take the triangular shape with full membership occurring where conflict mitigation is at 30%.

Table 8.17 *X* and *A* values for poor performance of conflict mitigation (QI 2)

Percentage (X)	Degree of membership (A)
20	0.200
30	1.000
35	0.400
40	0.600
50	0.200

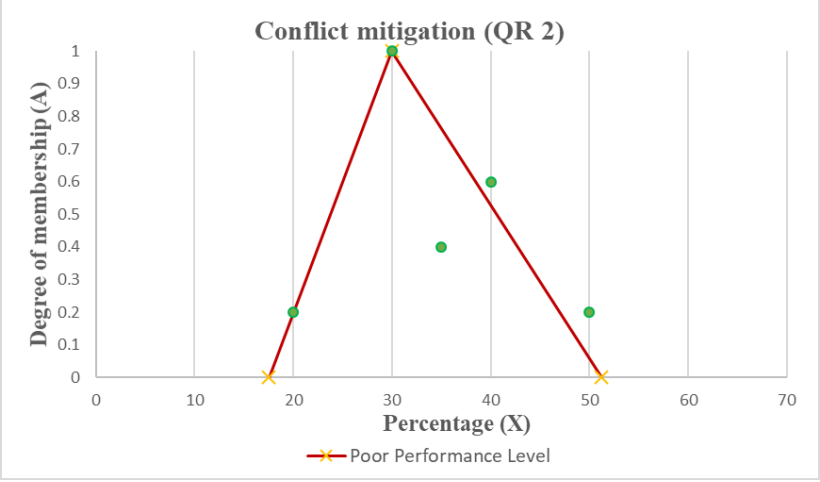

Figure 8.1 Illustration of the poor performance level of conflict mitigation (QI 2)

8.4.1.5 Identification of the FQRs for Each of the QIs Against the Five Performance Levels

The fuzzy MFs for the five bipolar performance levels of the six KPIs and respective QIs were computed in line with Yeung et al. (2012). The computation results are shown in Table 8.18.

Table 8.18 Best-fit lines (HEM, VEM, and BEM) for the MFs of the KPIs and respective QIs

Communication effectiveness			Smooth project facilitation		
Level	**Equation**	**Range**	**Level**	**Equation**	**Range**
V. Good			**V. Good**		
VEM	$y = 0.015217x - 0.217391$	$14.2861 \le x < 80$	VEM	$y = 0.04124x - 2.29897$	$55.74612 \le x < 80$
	$y = -0.0875x + 8$	$80 \le x \le 91.42857$		$y = -0.048x + 4.84$	$80 \le x \le 100$
HEM	$y = 0.02217x - 0.77381$	$34.90347 \le x < 80$	HEM	$y = 0.1088x - 7.70398$	$70.80864 \le x < 80$
	$y = -0.0875x + 8$	$80 \le x \le 91.42857$		$y = -0.05333x + 5.26667$	$80 \le x \le 98.75623$
BEM	$y = 0.01869x - 0.4952$	$26.49545 \le x < 80$	BEM	$y = 0.07493x - 4.9944$	$66.65421 \le x < 80$
	$y = -0.0875x + 8$	$80 \le x \le 91.42857$		$y = -0.05066x + 5.0528$	$80 \le x \le 99.73944$
Good			**Good**		
VEM	$y = 0.01689x - 0.18246$	$10.80284 \le x < 70$	VEM	$y = 0.05x - 2$	$40 \le x < 60$
	$y = -0.0857x + 6.999$	$70 \le x \le 81.66861$		$y = -0.03095x + 2.85714$	$60 \le x \le 92.3147$
HEM	$y = 0.02253x - 0.57719$	$25.61873 \le x < 70$	HEM	$y = 0.05x - 2$	$40 \le x < 60$
	$y = -0.0857x + 6.999$	$70 \le x \le 81.66861$		$y = -0.05385x + 4.23077$	$60 \le x \le 78.56583$
BEM	$y = 0.01971x - 0.3797$	$19.26433 \le x < 70$	BEM	$y = 0.05x - 2$	$40 \le x < 60$
	$y = -0.0857x + 6.999$	$70 \le x \le 81.66861$		$y = -0.04239x + 3.5434$	$60 \le x \le 83.59047$
Average			**Average**		
VEM	$y = 0.02381x - 0.19038$	$7.9958 \le x < 50$	VEM	$y = 0.02223x - 0.11172$	$5.02564 \le x < 50$
	$y = -0.0333x + 2.665$	$50 \le x \le 80.03003$		$y = -0.0833x + 5.165$	$50 \le x \le 62.0048$
HEM	$y = 0.03821x - 0.91037$	$23.82544 \le x < 50$	HEM	$y = 0.02864x - 0.43222$	$15.09148 \le x < 50$
	$y = -0.0333x + 2.665$	$50 \le x \le 80.03003$		$y = -0.0833x + 5.165$	$50 \le x \le 62.0048$
BEM	$y = 0.03101x - 0.5505$	$17.75233 \le x < 50$	BEM	$y = 0.02543x - 0.2715$	$10.67637 \le x < 50$
	$y = -0.0333x + 2.665$	$50 \le x \le 80.03003$		$y = -0.0833x + 5.165$	$50 \le x \le 62.0048$
Poor			**Poor**		
VEM	$y = 0.05x - 0.5$	$10 \le x < 30$	VEM	$y = 0.04267x - 0.70667$	$16.56128 \le x \le 40$
	$y = -0.03478x + 2.04348$	$30 \le x \le 58.75446$			
HEM	$y = 0.05x - 0.5$	$10 \le x < 30$	HEM	$y = 0.05625x - 1.25$	$22.22222 \le x \le 40$
	$y = -0.05833x + 2.75$	$30 \le x \le 47.14555$			
BEM	$y = 0.05x - 0.5$	$10 \le x < 30$	BEM	$y = 0.04946x - 0.9784$	$19.78164 \le x \le 40$
	$y = -0.04655x + 2.3965$	$30 \le x \le 51.48228$			
V. Poor			**V. Poor**		
VEM	$y = 0.1x$	$0 \le x < 10$	VEM		
	$y = -0.03x + 1.3$	$10 \le x \le 43.33333$		$y = -0.04667x + 1.46667$	$10 \le x \le 31.4264$
HEM	$y = 0.1x$	$0 \le x < 10$	HEM		
	$y = -0.03333x + 1.33333$	$10 \le x \le 40.0039$		$y = -0.05143x + 1.51429$	$10 \le x \le 29.44371$
BEM	$y = 0.1x$	$0 \le x < 10$	BEM		
	$y = -0.03166x + 1.3166$	$10 \le x \le 41.5856$		$y = -0.04905x + 1.4905$	$10 \le x \le 30.38736$
Stakeholder support of project			**Conflict mitigation**		
Level	**Equation**	**Range**	**Level**	**Equation**	**Range**
V. Good			**V. Good**		
VEM	$y = 0.13218x - 0.05747$	$0.43479 \le x < 8$	VEM	$y = 0.02857x - 1.57143$	$55.0028 \le x < 90$
	$y = 1$	$8 \le x \le 9$		$y = -0.075x + 7.75$	$90 \le x \le 100$
HEM	$y = 0.18841x - 0.50724$	$2.69221 \le x < 8$	HEM	$y = 0.0375x - 2.375$	$63.33333 \le x < 90$
	$y = 1$	$8 \le x \le 9$		$y = -0.075x + 7.75$	$90 \le x \le 100$
BEM	$y = 0.16017x - 0.28136$	$1.75663 \le x < 8$	BEM	$y = 0.03303x - 1.9727$	$59.72449 \le x < 90$
	$y = 1$	$8 \le x \le 9$		$y = -0.075x + 7.75$	$90 \le x \le 100$
Good			**Good**		
VEM	$y = 0.17194x - 0.20361$	$1.18419 \le x < 7$	VEM	$y = 0.088x - 5.16$	$58.63636 \le x < 70$
	$y = -0.857x + 6.999$	$7 \le x \le 8.16686$		$y = -0.064x + 5.48$	$70 \le x \le 85.625$
HEM	$y = 0.22192x - 0.55342$	$2.49378 \le x < 7$	HEM	$y = 0.09091x - 5.36364$	$58.99945 \le x < 70$
	$y = -0.857x + 6.999$	$7 \le x \le 8.16686$		$y = -0.1x + 8$	$70 \le x \le 80$
BEM	$y = 0.19681x - 0.37767$	$1.91896 \le x < 7$	BEM	$y = 0.08945x - 5.2615$	$58.82057 \le x < 70$
	$y = -0.857x + 6.999$	$7 \le x \le 8.16686$		$y = -0.08197x + 6.7379$	$70 \le x \le 82.19959$
Average			**Average**		
VEM	$y = 0.21288x - 0.06441$	$0.30256 \le x < 5$	VEM	$y = 0.02x$	$0 \le x < 50$
	$y = -0.429x + 3.145$	$5 \le x \le 7.331$		$y = -0.0686x + 4.43$	$50 \le x \le 64.57726$
HEM	$y = 0.25186x - 0.25929$	$1.0295 \le x < 5$	HEM	$y = 0.02x$	$0 \le x < 50$
	$y = -0.429x + 3.145$	$5 \le x \le 7.331$		$y = -0.10711x + 6.35561$	$50 \le x \le 59.33722$

BEM	$y = 0.23229x - 0.16145$	$0.69504 \leq x < 5$	BEM	$y = 0.02x$	$0 \leq x < 50$
	$y = -0.429x + 3.145$	$5 \leq x \leq 7.331$		$y = -0.08782x + 5.391$	$50 \leq x \leq 61.38693$
Poor			**Poor**		
VEM	$y = 0.24324x + 0.02703$	$0 \leq x \leq 4$	VEM	$y = 0.08x - 1.4$	$17.5 \leq x < 30$
				$y = -0.04381x + 2.31429$	$30 \leq x \leq 52.82561$
HEM	$y = 0.24444x + 0.02222$	$0 \leq x \leq 4$	HEM	$y = 0.08x - 1.4$	$17.5 \leq x < 30$
				$y = -0.05043x + 2.51304$	$30 \leq x \leq 49.83224$
BEM	$y = 0.24384x + 0.02464$	$0 \leq x \leq 4$	BEM	$y = 0.08x - 1.4$	$17.5 \leq x < 30$
				$y = -0.04712x + 2.4136$	$30 \leq x \leq 51.22241$
V. Poor			**V. Poor**		
VEM	$y = 0.49211x + 0.01578$	$0 \leq x < 2$	VEM	$y = 0.044x + 0.12$	$0 \leq x < 20$
	$y = -0.857x + 2.714$	$2 \leq x \leq 3.16686$		$y = -0.05538x + 2.10769$	$20 \leq x \leq 38.05869$
HEM	$y = 0.49312x + 0.01376$	$0 \leq x < 2$	HEM	$y = 0.04727x + 0.05454$	$0 \leq x < 20$
	$y = -0.857x + 2.714$	$2 \leq x \leq 3.16686$		$y = -0.05556x + 2.11111$	$20 \leq x \leq 37.99694$
BEM	$y = 0.49261x + 0.01478$	$0 \leq x < 2$	BEM	$y = 0.04563x + 0.0874$	$0 \leq x < 20$
	$y = -0.857x + 2.714$	$2 \leq x \leq 3.16686$		$y = -0.05547x + 2.1094$	$20 \leq x \leq 38.02776$

Management monitoring and response			**Uncertainty and risk mitigation**		
Level	**Equation**	**Range**	**Level**	**Equation**	**Range**
V. Good			**V. Good**		
VEM	$y = 0.0127x$	$0 \leq x < 78.75$	VEM	$y = 0.05x - 3$	$60 \leq x < 80$
	$y = -0.04432x + 4.49054$	$78.75 \leq x \leq 100$		$y = -0.05553x + 5.44267$	$80 \leq x \leq 98.01315$
HEM	$y = 0.0127x$	$0 \leq x < 78.75$	HEM	$y = 0.05x - 3$	$60 \leq x < 80$
	$y = -0.04512x + 4.55335$	$78.75 \leq x \leq 100$		$y = -0.0714x + 6.712$	$80 \leq x \leq 94.0056$
BEM	$y = 0.0127x$	$0 \leq x < 78.75$	BEM	$y = 0.05x - 3$	$60 \leq x < 80$
	$y = -0.04472x + 4.5217$	$78.75 \leq x \leq 100$		$y = -0.06346x + 6.0768$	$80 \leq x \leq 95.75796$
Good			**Good**		
VEM	$y = 0.015x - 0.05$	$3.33333 \leq x < 70$	VEM	$y = 0.02x - 0.4$	$20 \leq x < 70$
	$y = -0.04666x + 4.2662$	$70 \leq x \leq 91.43163$		$y = -0.06857x + 5.8$	$70 \leq x \leq 84.5851$
HEM	$y = 0.01667x - 0.16667$	$9.9982 \leq x < 70$	HEM	$y = 0.02x - 0.4$	$20 \leq x < 70$
	$y = -0.04881x + 4.41682$	$70 \leq x \leq 90.49006$		$y = -0.08x + 6.6$	$70 \leq x \leq 82.5$
BEM	$y = 0.01583x - 0.1081$	$6.82881 \leq x < 70$	BEM	$y = 0.02x - 0.4$	$20 \leq x < 70$
	$y = -0.04773x + 4.3411$	$70 \leq x \leq 90.95118$		$y = -0.07428x + 6.1996$	$70 \leq x \leq 83.46257$
Average			**Average**		
VEM	$y = 0.02x$	$0 \leq x < 50$	VEM	$y = 0.02025x$	$0 \leq x < 49.375$
	$y = -0.06324x + 4.16214$	$50 \leq x \leq 65.81499$		$y = -0.05209x + 3.57197$	$49.375 \leq x \leq 68.57305$
HEM	$y = 0.02x$	$0 \leq x < 50$	HEM	$y = 0.02025x$	$0 \leq x < 49.375$
	$y = -0.07924x + 4.96215$	$50 \leq x \leq 62.62178$		$y = -0.07053x + 4.48224$	$49.375 \leq x \leq 63.55083$
BEM	$y = 0.02x$	$0 \leq x < 50$	BEM	$y = 0.02025x$	$0 \leq x < 49.375$
	$y = -0.07124x + 4.562$	$50 \leq x \leq 64.03706$		$y = -0.0613x + 4.02669$	$49.375 \leq x \leq 65.68825$
Poor			**Poor**		
VEM	$y = 0.06667x - 1.13333$	$16.9991 \leq x < 32$	VEM	$y = 0.02566x - 0.02635$	$1.02689 \leq x < 40$
	$y = -0.03207x + 2.02623$	$32 \leq x \leq 63.18148$		$y = -0.04998x + 2.9992$	$40 \leq x \leq 60.008$
HEM	$y = 0.06667x - 1.13333$	$16.9991 \leq x < 32$	HEM	$y = 0.02614x - 0.0456$	$1.74445 \leq x < 40$
	$y = -0.03324x + 2.06361$	$32 \leq x \leq 62.08213$		$y = -0.05553x + 3.22133$	$40 \leq x \leq 58.01062$
BEM	$y = 0.06667x - 1.13333$	$16.9991 \leq x < 32$	BEM	$y = 0.0259x - 0.036$	$1.38996 \leq x < 40$
	$y = -0.03265x + 2.0448$	$32 \leq x \leq 62.62787$		$y = -0.05275x + 3.11$	$40 \leq x \leq 58.95735$
V. Poor			**V. Poor**		
VEM	$y = 0.04219x + 0.0858$	$0 \leq x < 21.67$	VEM	$y = 1$	$11.67 \leq x < 25$
	$y = -0.03502x + 1.75891$	$21.67 \leq x \leq 50.22587$		$y = -0.04668x + 2.167$	$25 \leq x \leq 46.42245$
HEM	$y = 0.04347x + 0.05803$	$0 \leq x < 21.67$	HEM	$y = 1$	$11.67 \leq x < 25$
	$y = -0.04544x + 1.98479$	$21.67 \leq x \leq 43.67936$		$y = -0.04762x + 2.19061$	$25 \leq x \leq 46.00189$
BEM	$y = 0.04283x + 0.07187$	$0 \leq x < 21.67$	BEM	$y = 1$	$11.67 \leq x < 25$
	$y = -0.04023x + 1.87178$	$21.67 \leq x \leq 46.52697$		$y = -0.04715x + 2.17875$	$25 \leq x \leq 46.20891$

Note: VEM= "vertical error method"; HEM= "horizontal error method"; BEM= "bisector error method"; V. Good= very good; and V. Poor= very poor.

The MFs of all performance levels belonging to specific KPIs were plotted on the same graphs and the best-fit lines were developed accordingly. The intersection points of successive MFs corresponding to the performance levels of the specific QIs were used to define the FQRs. This is

because such successive performance levels denote the same respective membership degrees (Yeung et al., 2012; Chow and Ng, 2007). For instance, the MF of "very poor" performance level quantitatively ranges up to the point where it shares the same degree of membership with the successive "poor" performance level. The FQRs finally defined for the six KPIs and the corresponding QIs are shown in Table 8.19.

The fuzzy MFs provide a sophisticated approach to model performance by considering the subjectivity and fuzziness naturally occurring in experts' cognition process and responses, which were not incorporated in the simplified ranges developed in Table 8.14. The shapes of the MFs predict the performance levels of respective KPIs. For instance, 10% information and enquiry feedback show the ideal representation of "very poor" performance of communication effectiveness because the membership at that point is full/complete (Figure 8.2). However, the focus of the model is not only to predict single points to represent the performance levels but rather reliable QRs as they are more natural. With only the single peak points, it will be difficult for practitioners to know whether 20% feedback should represent "very poor" or "poor" performance levels of communication effectiveness. Hence, the MFs enable the establishment of appropriate QRs for common usage in the industry.

Table 8.19 Fuzzy QRs for the respective QIs of the KPIs against the five performance levels

Performance levels of KPIs	Most important quantitative indicator (QI)	Fuzzy quantitative requirements/ranges (FQRs)				
		VPP	**PP**	**AP**	**GP**	**VGP**
KPI 1: Communication effectiveness	QI 2: Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups	< 22.25	≥ 22.25 to < 38.00	≥ 38.00 to < 57.44	≥ 57.44 to < 71.79	≥ 71.79
KPI 2: Stakeholder support of project	QI 2: Perception-based assessment of external stakeholder support by key stakeholders using 10-point Likert scale (e.g. scoring from very poor to very good)	< 2.44	≥ 2.44 to < 4.00	≥ 4.00 to < 5.63	≥ 5.63 to < 7.16	≥ 7.16
KPI 3: Management monitoring and response	QI 2: Percentage of external stakeholder group requirements that have been considered or fulfilled in project	< 28.11	≥ 28.11 to < 38.84	≥ 38.84 to < 53.64	≥ 53.64 to < 71.84	≥ 71.84
KPI 4: Smooth project facilitation	QI 1: Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholders)	< 25.06	≥ 25.06 to < 40.00	≥ 40.00 to < 53.75	≥ 53.75 to < 72.77	≥ 72.77
KPI 5: Conflict mitigation	QI 2: Percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved	< 25.91	≥ 25.91 to < 35.96	≥ 35.96 to < 60.09	≥ 60.09 to < 75.74	≥ 75.74
KPI 6: Uncertainty and risk mitigation	QI 3: Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making	< 30.32	≥ 30.32 to < 42.60	≥ 42.60 to < 54.45	≥ 54.45 to < 74.02	≥ 74.02

Note: VPP= "very poor" performance, PP= "poor" performance, AP= "average" performance; GP= "good" performance; and VGP= "very good" performance. Also, M= mean, and SD= standard deviation.
Note: Except for the KPI 2 which is measured by scores, all other KPIs' ranges are in percentages (%).

In terms of value and application of the MFs, 10% feedback rate for example, will inform the practitioners and decision-makers that their communication with ESGs is "very poor". Partially, it will mean that ESGs are not appropriately satisfied in project (Oppong et al., 2017). Therefore, the MFs will enable practitioners and decision-makers to benchmark and monitor the consideration/ satisfaction of ESGs in project development. They can then adopt corresponding strategies to improve communication effectiveness with the ESGs, e.g. introducing new two-way communication channels to improve feedback on information flow. Eventually, this will make the ESGs get updated about project knowledge and become greater part of the project development.

8.4.1.5.1 Fuzzy QRs for Communication Effectiveness (QI 2)

Figure 8.2 illustrates the fuzzy MFs of the five bipolar performance levels to measure communication effectiveness (KPI 1) objectively and realistically. It can be observed that the fuzzy MFs of all performance levels are triangular in shape. The full memberships of the increasing performance degrees occur at 10%, 30%, 50%, 70% and 80% respectively on the percentage scale of feedback on enquiries and information transfer to and from ESGs. The QRs defined in Table 8.19 are to help incorporate the vagueness of the performance levels occurring naturally in the experts' cognition process and perceptions. It is indicated that feedback percentage on enquires and information transfer to and from ESGs that is less than 22.25% at the project PS is to be interpreted as "very poor" communication performance. In terms of the other performance levels, feedback percentage ranging from 22.25% to below 38% is "poor", feedback percentage ranging from 38% to less than 57.44% is "average", feedback percentage from 57.44% to under 71.79% is "good", whereas feedback percentage equivalent to or more than 71.79% is "very good" communication performance with ESGs at project PS.

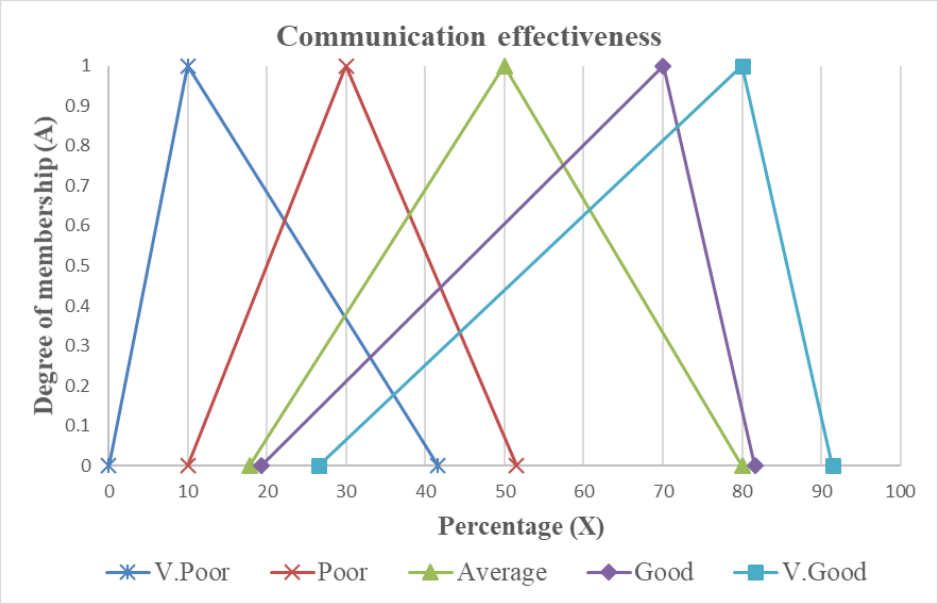

Figure 8.2 Fuzzy MFs and QRs of communication effectiveness (QR 2)

8.4.1.5.2 Fuzzy QRs for Stakeholder Support of Project (QI 2)

The fuzzy MFs of the different performance levels for evaluating stakeholder support of project (KPI 2) practically are illustrated in Figure 8.3. The fuzzy MFs for "very poor", "poor", "average" and "good" performance levels are triangular figures, whereas the fuzzy MF for "very good" performance level is of trapezoidal shape. On the 10-point Likert scale (from "very poor" to "very good"), the peak memberships of the increasing performance degrees happen at 2, 4, 5, 7, and 8−9 correspondingly. The required fuzzy ranges on the Likert scale for assessing stakeholder support of project are shown in Table 8.19. A score of less than 2.44 denotes "very poor" performance. Besides, "poor", "average", "good" and "very good" performance levels are represented by scores as follows: from 2.44 to below 4, from 4 to under 5.63, from 5.63 to less than 7.16, and from 7.16 to 10 respectively. The support that ESGs have for project development at the PS could therefore be objectively measured and monitored.

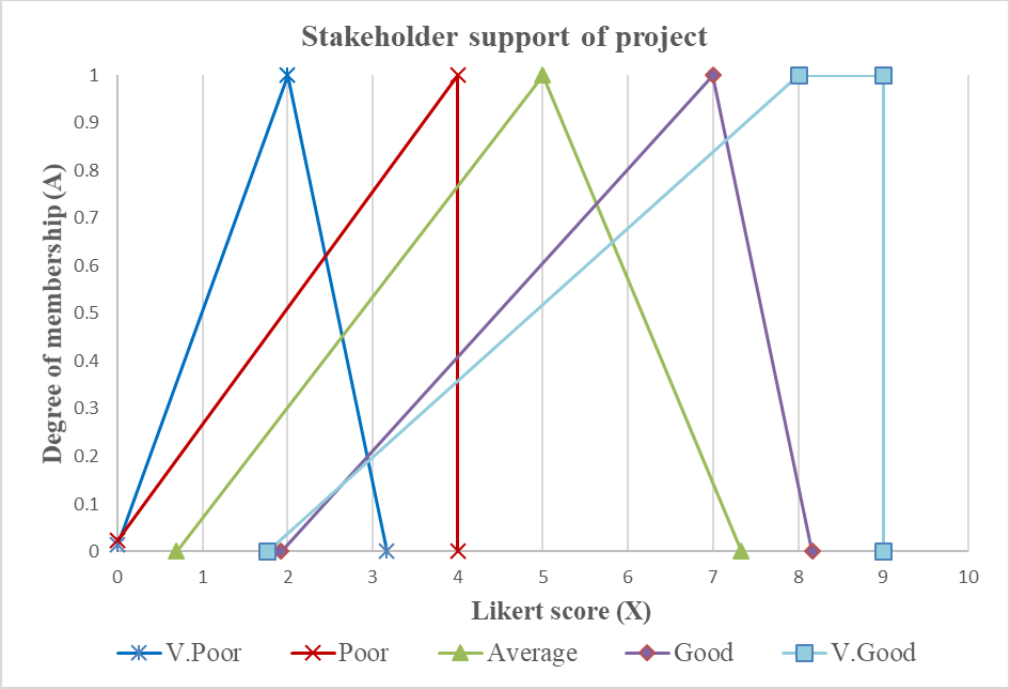

Figure 8.3 Fuzzy MFs and QRs of stakeholder support of project (QR 2)

8.4.1.5.3 Fuzzy QRs for Management Monitoring and Response (QI 2)

Figure 8.4 reveals the fuzzy MFs and FQRs of the five performance levels associated with management monitoring and response (KPI 3). The percentage of ESG requirements that have been considered or fulfilled in project is calibrated to evaluate the extent of management monitoring and response. All the fuzzy MFs for the five bipolar performance levels are triangular, thus, they are all respectively constrained through single full membership points at the heights. On the percentage scale, the perfect memberships for "very poor", "poor", "average", "good" and "very good" performance levels are situated at 21.67%, 32%, 50%, 70% and 78.75% respectively. The fuzzy QRs for the ESG requirement consideration/fulfilment in projects are pointed out in Table 8.19. When the percentage of ESG requirements considered/fulfilled in project is lower than 28.11%, it will be labelled as "very poor" performance. "Poor" and "average" performance levels will also refer to requirement consideration/fulfilment percentages ranging from 28.11% to below

38.84% and 38.84% to lower than 53.64% respectively. Besides, FQRs from 53.64% to under 71.84%, and 71.84% to 100% respectively denote "good" and "very good" performance levels of management monitoring and response at the project PS in the GCI.

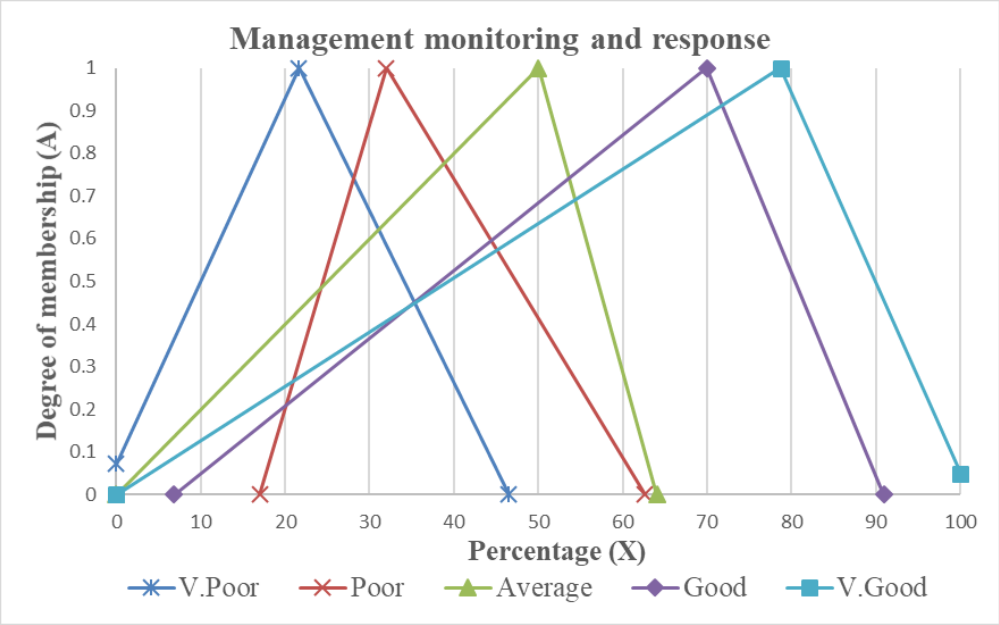

Figure 8.4 Fuzzy MFs and QRs of management monitoring and response (QR 2)

8.4.1.5.4 Fuzzy QRs for Smooth Project Facilitation (QI 1)

The fuzzy MFs and QRs of the five successive bipolar performance levels for evaluating smooth project facilitation (KPI 4) are presented in Figure 8.5. The targeted deadlines met at the PS that relates with ESGs are calibrated in percentages to evaluate KPI 4 in construction projects of Ghana. The fuzzy MFs of the five performance levels are all triangularly shaped. By successfully meeting 10%, 40%, 50%, 60% and 80% of related project deadlines at the PS, the full memberships for "very poor", "poor", "average", "good" and "very good" performance degrees separately occur. The FQR for "very poor" performance of smooth project facilitation is when the percentage of deadlines met is below 25.06%. Additionally, "poor", "average", "good" and "very good" performance levels are represented by ranges of 25.06% to below 40%, 40% to under 53.75%,

53.75% to less than 72.77%, and 72.77% to 100% of deadlines fulfilled respectively. All the FQRs of the performance levels for evaluating KPI 4 are captured in Table 8.19.

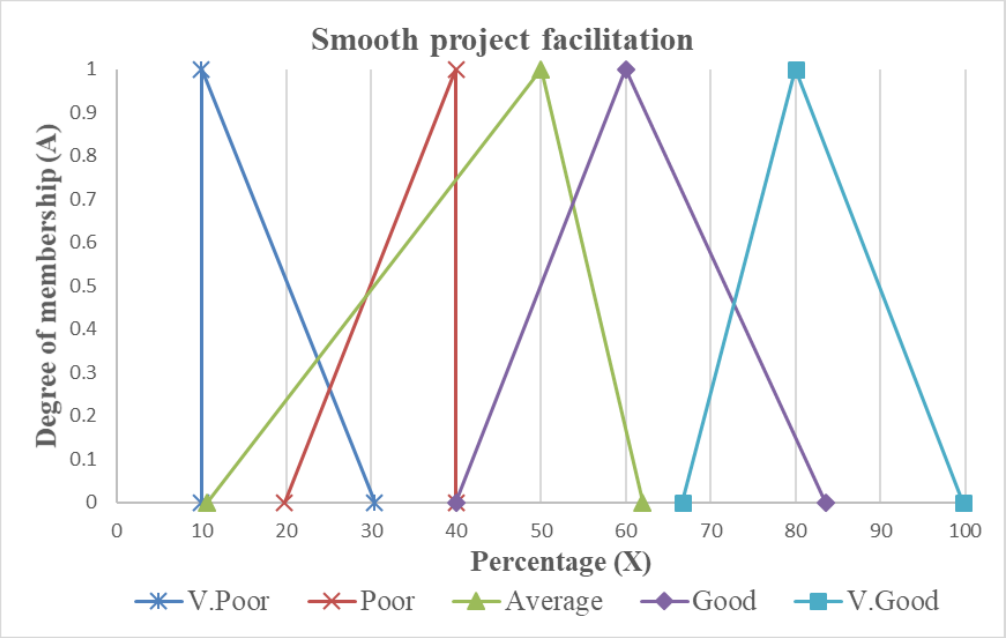

Figure 8.5 Fuzzy MFs and QRs of smooth project facilitation (QR 1)

8.4.1.5.5 Fuzzy QRs for Conflict Mitigation (QI 2)

Figure 8.6 indicates the fuzzy MFs and QRs for evaluating the level of conflict mitigation (KPI 5) with respect to ESGs at the project PS. The five levels of performance are interpreted by the percentages of disputes and disagreements involving the ESGs that have been comprehensively resolved at the project PS. All the fuzzy MFs for the increasing performance levels take the triangular shape. The entire graph is sectioned at the left and right boundaries, hence, the MFs at the ends appear incomplete. The highest memberships of the increasing five performance levels occur where the extents of dispute and disagreement resolution are 20%, 30%, 50%, 70% and 90% separately. The FQRs of the five performance levels for conflict mitigation are labelled as follows: "very poor" for mitigation below 25.91%; "poor" for mitigation from 25.91% to less than 35.96%;

"average" for mitigation ranging from 35.96% to under 60.09%; "good" for mitigation from 60.09% to below 75.74%; and "very good" where mitigation is at least 75.74% (Table 8.19).

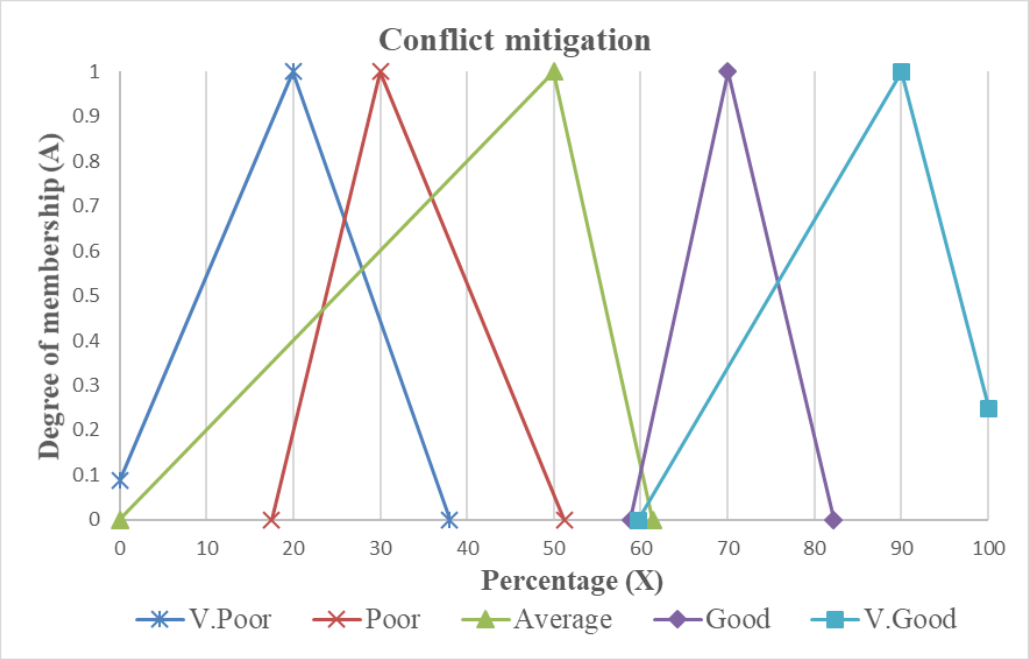

Figure 8.6 Fuzzy MFs and QRs of conflict mitigation (QR 2)

8.4.1.5.6 Fuzzy QRs for Uncertainty and Risk Mitigation (QI 3)

The fuzzy MFs for the continuous performance levels of uncertainty and risk mitigation (KPI 6) are captured in Figure 8.7. The average percentage of ESG representation in project meetings or decision-making is calibrated to measure uncertainty and risk mitigation in projects. Except for "very poor" performance level which takes a trapezoidal shape, the fuzzy MFs for the other four performance levels are triangularly shaped. The highest memberships of the ascending performance levels happen where uncertainty and risk mitigation reaches 11.67%−25%, 40%, 49.375%, 70% and 80% respectively. In order to objectively assess uncertainty and risk mitigation at the "very poor", "poor", "average", "good" and "very good" performance levels, the corresponding QRs that should be adopted are as follow: below 30.32%; from 30.32% to below

42.6%; from 42.6% to under 54.45%; from 54.45% to less than 74.02%; and from 74.02% to 100% (Table 8.19).

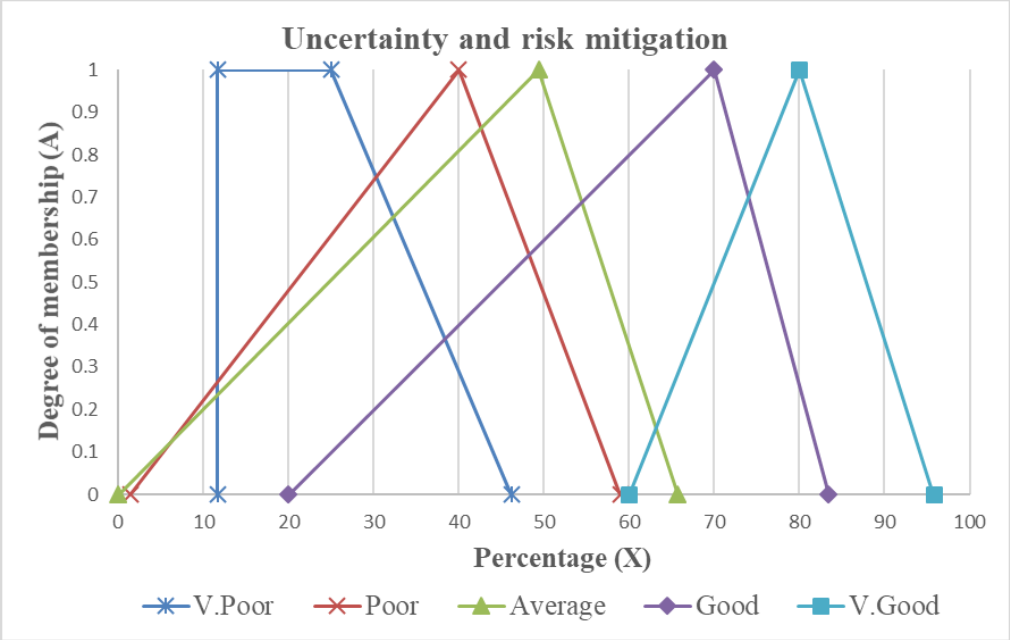

Figure 8.7 Fuzzy MFs and QRs of uncertainty and risk mitigation (QR 3)

8.5 CASE STUDY TO EXEMPLIFY THE APPLICATION OF THE PERFORMANCE ASSESSMENT SYSTEM

The case examined in this section is a socio-economic redevelopment project at the central business district (Kejetia) of Kumasi metropolis in Ghana. The state of the old area before redevelopment did not fit the vision of the city and modernization was proposed. Moreover, the project was proposed then to solve the problems of human and vehicular congestion, and regular fire outbreaks which hampered trade and transport activities. Therefore, the government of Ghana allocated about US$298 million to undertake the redevelopment of the area to modern standards. The scope of the project comprises redevelopment of the central bus terminal, central market (about 25,000 stores), road networks around the area, banks, police stations, two sewage treatment plants and a day nursery school, among other facilities. Due to the extensive land coverage of the

project, it was planned to be executed in three phases. The project is expected to enhance the socio-economic and environmental state of stakeholders over extensive duration. The ESGs identified include but not limited to traders/hawkers, porters, shop owners, Petty Traders Association, transport unions, motorists, the general public, the media, EPA, the traditional council and local rulers, opinion leaders, squatters, close by entities (e.g. schools, zoo and hospital), and religious groups. The project PS stretched from 2011 to 2013. The conceptual design and implementation images of the project are shown in the Figures 8.8 to 8.10.

Figure 8.8 Conceptual design of proposed redevelopment project

Source: Google images

Figure 8.9 First phase of redevelopment project in execution

Source: Google images

Figure 8.10 First phase of redevelopment project completed

Source: Google images

Many issues were raised by the ESGs during project planning and progress including (Asante, 2017): receiving compensations will deny shop owners rights to new stores; fears that the new stores will be obtained by the "friends" of the incumbent government; reluctance of the government to sign store allocation agreement with traders; conflicts with the ESGs were usually ignored and/or suppressed by the project developers; compensations delayed so much even though the store spaces have been valued; participation of the ESGs in project design and planning was lower than expectation; the ESGs' leaders were only updated about the looks of the market upon completion; the ESG leaders were denied access to full contract details on the market like user charges and rental fees for the new spaces; the ESG leaders who went to observe the prototype market in a foreign country were handpicked by authorities without fairness; loss of economic fortunes as the temporary satellite markets provided could not attract adequate customers; and superstitious and cultural beliefs that some items sprinkled or buried in the previous stores by traders boosted their economic trades. The project has been delayed due to litigations between the metropolitan assembly and the private landowners on the demolition of affected structures.

The Project Consultant having 15 years of industry experience in relating with, engaging or managing ESGs provided the performance inputs on the ongoing project. The ESM process conducted on the project was assessed using the performance system developed in this study. The respondent assigned 70% to communication effectiveness (KPI 1) in terms of feedback on information to and from the ESGs. Stakeholder support of project (KPI 2) was scored 8 out of 10 on the Likert scale. The performance of management monitoring and response (KPI 3) with respect to the total percentage of ESGs' requirements considered or fulfilled in project was 65%. Smooth project facilitation (KPI 4) obtained 75% in line with the percentage of deadlines met. The respondent further informed that 80% of conflicts involving ESGs have been mitigated and the

average ESG representation in project meeting/decision-making was 70%. Therefore, "communication effectiveness", "stakeholder support of project", "management monitoring and response", "smooth project facilitation", "conflict mitigation", and "uncertainty and risk mitigation" obtained "good", "very good", "good", "very good", "very good" and "good" performance levels respectively.

After determining the percentages and scores for the respective QIs of the KPIs, they need to be normalised with respect to the FQRs. This will make the interpretation and understanding of the assessment results easier to ensure applicability (Ibrahim et al., 2015b). Accordingly, the normalization scale will be from 1 (very poor) to 5 (very good) (Ibrahim et al., 2015b). Specifically, the labelling is after the pattern as follows: very poor performance (1.00 to 1.499), poor performance level (1.50 to 2.499), average performance level (2.50 to 3.499), good performance level (3.50 to 4.499), and very good performance level (4.50 to 5.00). The KPI 1 (communication effectiveness) will be demonstrated using the normalization approach. From Table 8.19, the 70% lies within the "good" performance range (≥ 57.44% to < 71.79%). By means of a simple derived linear equation at the good performance level ($y = 14.36436x + 7.16474$), the normalised value for 70% of communication effectiveness within the range 3.50 to 4.499 was computed to be 4.3744. The single index value for communication effectiveness (KPI 1) was obtained by multiplying the normalised value with the respective weighting of 0.1879. Hence, the single communication effectiveness performance index will be 0.8219. In similar manner, the single performance indexes of the other KPIs were computed and presented in Table 8.20. The overall ESM performance index for the redevelopment project was derived by summing up the indexes for the individual KPIs. The overall index will always range from 1 to 5, and the labelling of performance level should

follow what has been described earlier in this paragraph. In this example, the overall index of the redevelopment project will be 4.4279 (good level).

The SM performance level is comparable to the degree of mutual SS in construction projects (Oppong et al., 2017). Hence, it can be established that the ESGs had a mutually good satisfaction experience at the PS of the redevelopment project in Ghana. The steps taken in computing the indexes will ensure that comparison could be drawn with other construction projects sharing similar ESG structure, project features, and industry characteristics. For instance, countries like South Africa, Uganda and Nigeria have similar ESGs in projects, particularly the traditional rulership and leadership structure of communities (ECA, 2007; Arimoro, 2015). Different projects from these settings will be good for comparison on ESM performance at project PS. In the same project, it will enable ESM performance levels to be monitored, benchmarked and upgraded at the PS.

Table 8.20 Overall index value of individual KPIs based on the assessment of QIs

Redevelopment project in Ghana				
Key performance indicators	**KPI weighting**	**Assigned values**	**Performance level**	**Weighted index value**
KPI 1: Communication effectiveness (QI 2)	0.1879	70%	Good	0.8219
KPI 2: Stakeholder support of project (QI 2)	0.1741	8 out of 10 score	Very good	0.8092
KPI 3: Management monitoring and response (QI 2)	0.1695	65%	Good	0.6989
KPI 4: Smooth project facilitation (QI 1)	0.1627	75%	Very good	0.7388
KPI 5: Conflict mitigation (QI 2)	0.1569	80%	Very Good	0.7198
KPI 6: Uncertainty and risk mitigation (QI 3)	0.1489	70%	Good	0.6393
External stakeholder management performance index				**4.4279**
External stakeholder management performance level				**Good**

8.6 CONCLUSION

In the construction industry particularly, SS is very subjective and inherently fuzzy to determine. Accordingly, the same satisfaction level could be interpreted differently by diverse assessors. In

this chapter, a performance assessment system has been developed for ESM at project PS using the Delphi survey technique and FST approach. The performance assessment system was developed by identifying the comprehensive set of KPIs, establishing the respective QIs, defining the respective QRs using the FST approach, and then, validating it using a real-time project in Ghana. The system will ensure that ESM performance assessment could be conducted in developing countries sharing similar ESG structure and industry characteristics. In effect, ESM performance (i.e. mutual external SS) could be quite objectively and realistically measured, monitored, benchmarked and upgraded to desired levels. In Chapter 9, the resultant framework will be developed to guide ESM practice and performance assessment in the GCI by considering the findings from all the objectives.

CHAPTER 9 PRACTICE FRAMEWORK FOR EXTERNAL STAKEHOLDER MANAGEMENT IN CONSTRUCTION PROJECTS OF GHANA

9.0 INTRODUCTION

In this chapter, the practice framework for managing ESGs successfully in construction projects of Ghana is developed. Specifically, the findings from in-depth literature review, case studies, semi-structured interviews, ordinary survey, and Delphi survey are triangulated into the framework. The framework will guide practitioners in improving ESM practice and associated performance assessment at the PS of construction projects in Ghana and developing nations sharing similar external stakeholder structure and industry characteristics. Additionally, the practice framework is validated through questionnaire survey on practicing experts in the GCI.

9.1 SUMMARY OF RESEARCH FINDINGS

Table 9.1 and Figure 9.1 provide summary of how the six operational objectives of the study have been respectively achieved. In order to achieve each objective, the findings from the different data collection methods were triangulated appropriately. For instance, apart from the 24 CSFs identified in the ordinary survey, other factors were added from the interviews including the practical strategies adopted by managers, ways of dealing with the stakeholder dynamics, and the critical SFs. The 34 consolidated factors constitute the best practices (CSFs) that were further categorized into 8 groups to achieve the fourth objective. The consolidated findings of the objectives were then used to develop the practice framework for managing ESGs in construction projects.

Table 9.1 How the operational research objectives were achieved

Research Aim and Objectives	How each objective was achieved	Findings/outcomes
Aim: Develop a framework that will serve as an industrial guide for external stakeholder management practice and performance evaluation at the planning stage of construction projects		
1. Investigate the present practices of external stakeholder management in construction projects of Ghana	Expert interviews revealed some approaches used by practitioners to identify, engage and prioritize the ESGs and their expectations. Also, the indicators of how well ESGs are managed and the objectives of SM process were revealed.	Eleven (11) objectives, 4 identification approaches, 10 engagement approaches, 8 prioritization approaches, and 5 indicators were found.
2. Identify the main expectations of external stakeholder groups in project development in the Ghana Construction Industry	Twenty-four (24) factors were initially consolidated from literature and reviewed by experts. The ranked critical expectations identified from the ordinary survey were complemented with the findings from the expert interviews.	Thirty (30) main expectations were identified and categorized into 9 groups conceptually based on underlying common themes.
3. Investigate the obstacles inhibiting effective external stakeholder management at the planning stage of projects in the Ghana Construction Industry	Thirty (30) inhibiting factors were initially consolidated from literature and reviewed by experts. Through the ordinary survey, the ranked critical obstacles were grouped. The supplementary inhibiting factors identified through the interviews were fed into the already statistically established groups.	Overall, 31 critical obstacles were identified and categorized into six groups.
4. Investigate the critical success factors for external stakeholder management at the planning stage of projects in the Ghana Construction Industry	Twenty-five (25) success factors were initially consolidated from literature and reviewed by experts. Through the survey, the ranked critical success factors were grouped. Through the expert interviews, some more factors were identified from the practical strategies adopted by managers, ways of dealing with the stakeholder dynamics, and the critical success factors. The complementary factors identified were added to the findings from survey.	Eventually, 34 factors were identified in study. The 7 groups of factors originally obtained from the survey were modified to 8 groups to accommodate the complementary factors from the interviews.
5. Investigate the measures of external stakeholder management performance and how they should be quantified at the planning stage of projects in the Ghana Construction Industry	Twenty-two (22) PIs (and corresponding potential measurement approaches) were initially consolidated from literature and reviewed by experts. First three rounds of Delphi survey resulted in the weighted linear additive model and the final three rounds helped to calibrate the most appropriate scales for easy interpretation.	Six (6) weighted KPIs were established for the linear additive model. The most appropriate quantitative interpretation for each KPI was calibrated into 5 performance levels: very poor, poor, average, good, and very good levels. The computation was tested on a real project in Ghana.
6. Develop and validate a framework for the best practice and performance appraisal of external stakeholder management at the planning stage of projects in the Ghana Construction Industry	The findings from the surveys and interviews (i.e. the results from the previous 5 objectives) were triangulated into the framework.	The framework is composed of the central portion and two subsystems comprising the findings achieved in the study. It was then validated by experts to be appropriate and suitable for practice in the GCI.

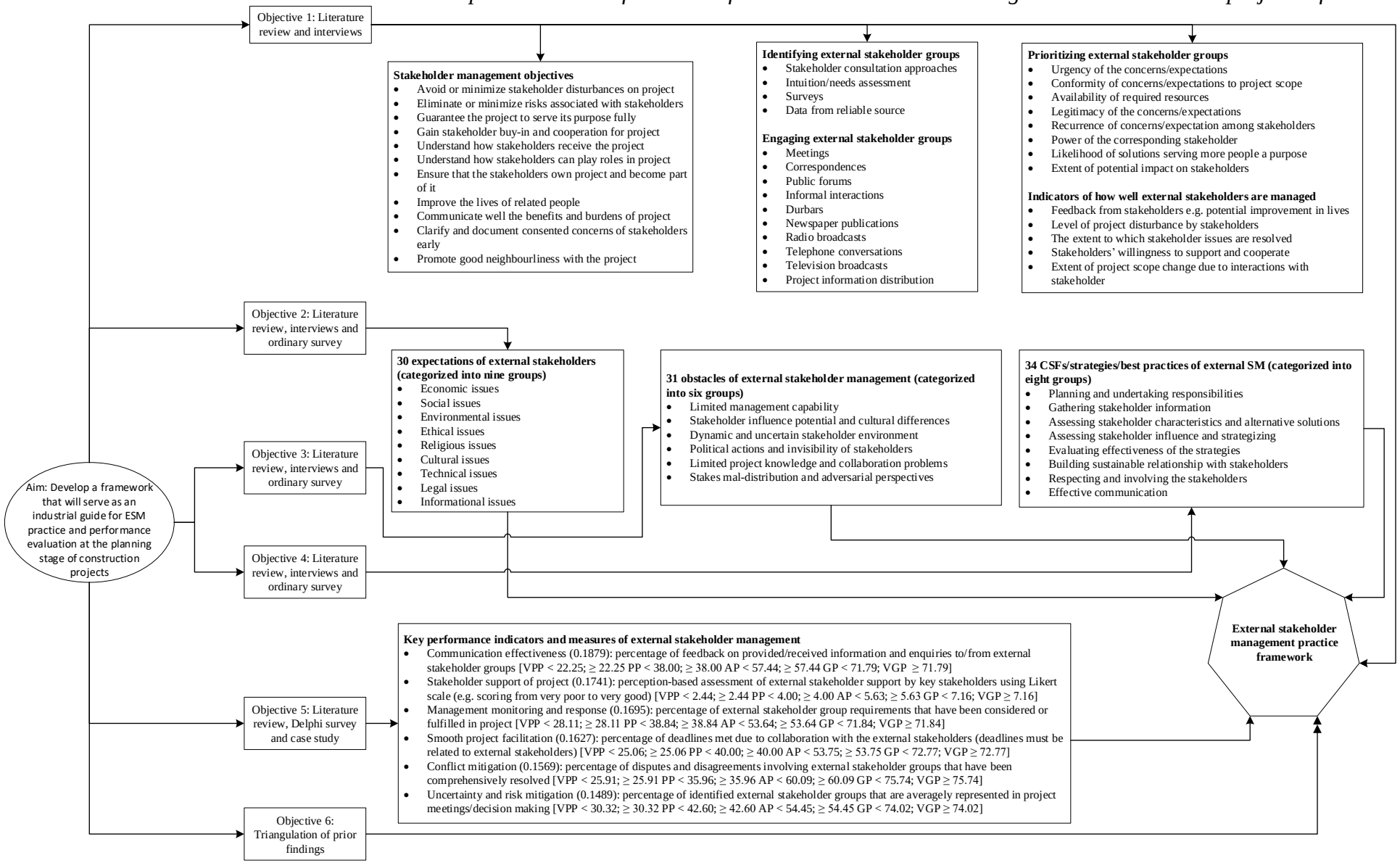

Figure 9.1 Summary of research findings

9.2 FRAMEWORK FOR EXTERNAL STAKEHOLDER MANAGEMENT IN GHANA

The developed framework for managing ESGs in projects is indicated in Figure 9.2. It is basically composed of two sub-systems which are elaborated in the following sub-sections.

9.2.1 General Overview of the External Stakeholder Management Framework

The focus of the framework is to successfully manage the ESGs at the PS of projects. However, it must be acknowledged that this framework could be extended to the subsequent project stages with the necessary modifications and validation to suit context. Besides, given the uniqueness of individual construction projects, some of the practices can be omitted to suit the context. First, the central portion of the framework indicates the general outcomes of the ESM processes in projects. The practitioners and decision-makers have to manage the interactions of the project scope and objectives with the expectations and relationships of the ESGs. The expectations of the ESGs may be economic, social, environmental, religious, cultural, technical, ethical, legal or informational in nature. The interactions of project objectives and scope with the ESE will result in the mutual satisfaction or dissatisfaction of ESGs. The framework was developed with the mindset of management-for-stakeholders that strives to ensure equitable and sustainable engagement of ESGs in project development. Thus, the project is developed to optimize the values/benefits accruing to the diverse ESGs. Hence, the extent of mutual satisfaction or dissatisfaction represents the consideration of the identified ESGs in project development.

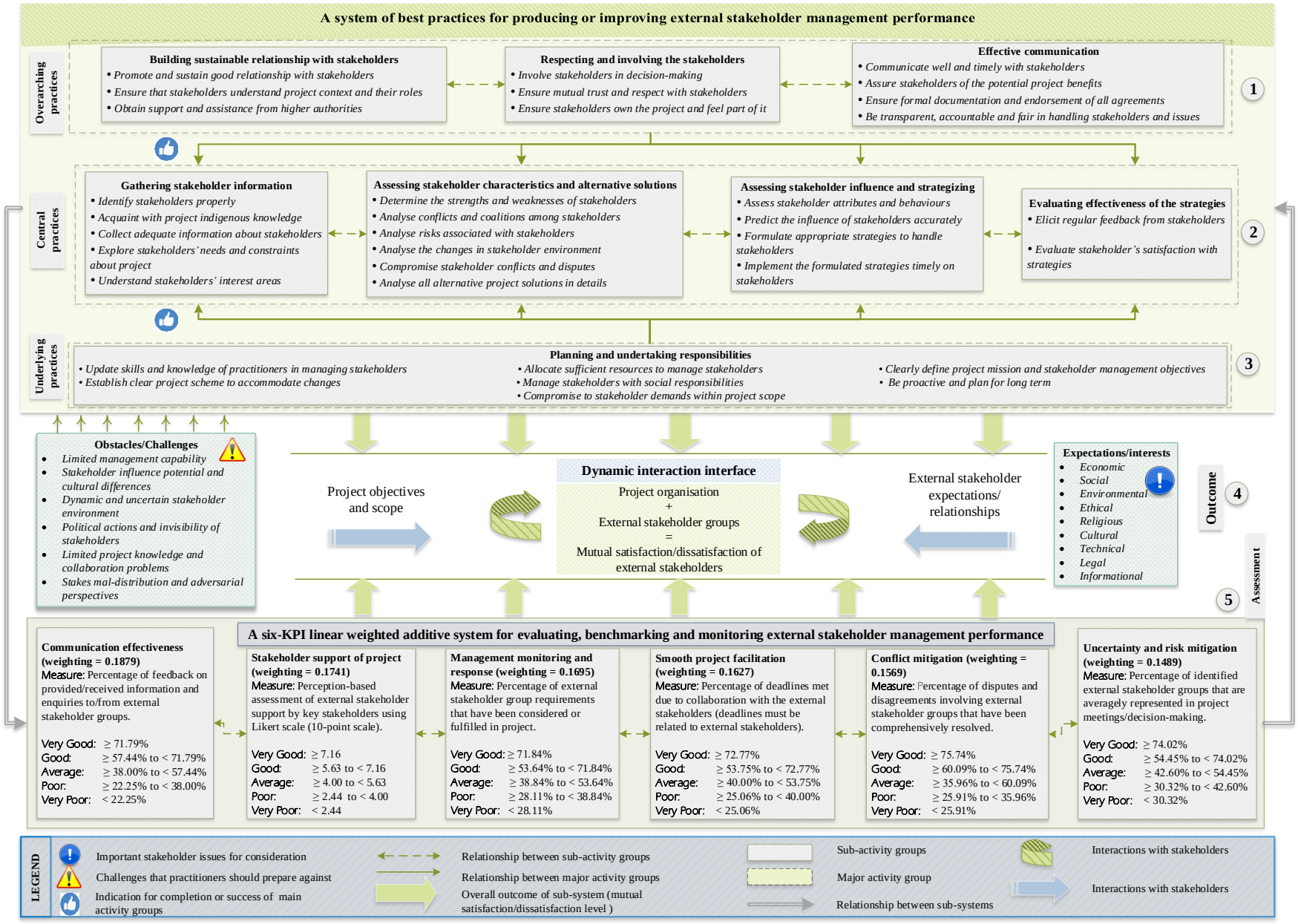

Figure 9.2 Resultant framework for managing ESGs in Ghana

Meanwhile, the decision-makers and practitioners should be mindful of the potential challenges in the ESE including limited management capability, stakeholder influence potential and cultural differences, dynamic and uncertain stakeholder environment, political actions and invisibility of the stakeholders, limited project knowledge and collaboration problems, and stakes mal-distribution and adversarial perspectives. The decision-makers and practitioners should be proactive and prepared to win against these possible challenges in the ESE.

The upper subsystem refers to the best practices for producing or improving the ESM performance in construction projects. Also, the lower subsystem presents a fully operational system for assessing, benchmarking and monitoring the ESM performance in construction projects. Basically, the upper subsystem answers "what should be done to achieve or improve the performance of ESM", whereas the lower subsystem answers "how should the achieved performance of ESM be objectively and reliably assessed, benchmarked and monitored" in projects. The relationship between the two subsystems enables the mutual satisfaction of ESGs to be improved until the desired level is reached during the PS of projects.

9.2.2 Upper Subsystem: Best Practices for Producing or Improving ESM Performance

The upper subsystem comprises three levels of best practices, namely; underlying practices, central practices, and overarching practices. The labelling of the three levels of best practices follows a more literal sense to represent ascending heights of a structure. The upper subsystem is made up of 34 practices categorized into 8 subgroups. The initial structure of the PCFA results was modified to accommodate the findings from the interviews on the experts. The application of these best practices is predicted to enhance the mutual satisfaction of the ESGs in projects.

9.2.2.1 Underlying Practices of External Stakeholder Management in Projects

The underlying practices form the foundation of the ESM process and are together named "planning and undertaking responsibilities". First, the knowledge and skills required for effective SM such as communication and relationship building skills ought to be improved regularly through professional development programmes. This will enable the decision-makers and practitioners to relate properly with ESGs who may exhibit diverse attributes and attitudes in project. Second, practitioners must plan to manage the ESGs over a long-term period so that more proactive management decisions could be reached and implemented. Third, the developers or financiers of project must make sufficient resources available to equitably manage the expectations and requirements of the ESGs in projects. Fourth, practitioners must clearly specify the project mission and the ESM objectives. For instance, the major ESM objectives for consideration include the following: (1) avoid or minimize stakeholder disturbances on project, (2) eliminate or minimize risks associated with stakeholders, (3) guarantee the project to serve its purpose fully, and (4) gain stakeholder buy-in and cooperation for project.

Fifth, the practitioners must establish a scheme or structure by which changes will be considered in project where necessary. This will help to minimize unnecessary misunderstandings on what new requirements of ESGs should be considered or ignored in project. Similarly, it is important for the practitioners to compromise only to the demands and requirements of ESGs that are within the scope of project. Finally, the practitioners must analyse the social responsibilities by outlining the ESGs that require attention in the project development (Donaldson and Preston, 1995; Carroll, 1991). The social responsibilities incorporate the expectations that the ESGs pursue in projects. Apart from the economic, environmental, legal, cultural and ethical responsibilities (Yang and Shen, 2015), social, religious, informational and technical responsibilities are also relevant

considerations in the GCI. The consideration of these issues is the core duty of practitioners and decision-makers in managing the project ESGs.

9.2.2.2 Central Practices of External Stakeholder Management in Projects

The central practices of ESM are further grouped into "gathering stakeholder information", "assessing stakeholder characteristics and alternative solutions", "assessing stakeholder influence and strategizing", and "evaluating effectiveness of the strategies". These are further elaborated in the sub-sections below.

9.2.2.2.1 Gathering Stakeholder Information

It is very crucial for practitioners to obtain the right information about the ESGs given that they are not very organised like the internal stakeholders. First, the ESGs must be identified based on their interests in project, potential of influencing or being affected by project, and/or indispensability in project. The approaches for identifying the ESGs include stakeholder consultation methods, data collection from reliable source, intuition/needs assessment, and surveys. This practice will produce a long list of ESGs that should be considered in specific project. Second, the practitioners must acquaint themselves with the indigenous knowledge in the project communities such as acceptable project delivery culture. Such indigenous knowledge affects the interests of the ESGs in project. Third, the practitioners must collect and explore adequate information about the ESGs including contacts, expectations, interest areas and constraints about project (Yang and Shen, 2015). The overall outcome of these practices will be detailed reference information about each ESG in project.

9.2.2.2.2 Assessing Stakeholder Characteristics and Alternative Solutions

At this stage, the practitioners must analyse the information collected about the ESGs in project. First, the practitioners must be clear about the weaknesses and strengths of the ESGs. The strengths include resource possession, political connections, public support, workable influence strategies and dedication of stakeholders, whereas the weaknesses also include lack of political will, poor organisation, incoherent and ineffective influence strategies, and non-commitment of members (Cleland, 1988). Second, the conflicts and coalitions existing among the ESGs should be analysed by grouping similar interests and expectations together. This practice will lead practitioners to compromise the conflicting interests with and among the ESGs in project. Third, the practitioners must analyse the risks associated with the ESGs such as excessive approval procedures, land acquisition problems, and socio-political risks (Xia et al., 2017; Boutilier and Zdziarski, 2017; Babatunde et al., 2017). The risk analysis process should consider both the threats and opportunities that the ESGs present in the project (Xia et al., 2018). Fourth, the changes that are manifesting in the ESE should be well analysed and tracked by the practitioners. The changes may occur in the interests, expectations, relationships, and attributes of the ESGs. Finally, the alternative project options should be properly and transparently analysed so that the ESGs could compare the costs and benefits of the options. The outcomes of these practices will be the prioritization of stakeholders, issues and project options.

9.2.2.2.3 Assessing Stakeholder Influence and Strategizing

At this stage, the focus is on being able to predict the influence of the ESGs in projects and devising appropriate strategies to implement. First, the practitioners ought to assess the nature of attributes and behaviours of the ESGs in project. The attributes are the proximity, legitimacy, power and urgency of ESGs in project (Bourne, 2005; Mitchell et al., 1997). Also, the behaviours of ESGs

include cooperative potential, competitive threat and actual behaviour (Freeman, 1984). Besides, the practitioners should assess each ESG based on their supportiveness and receptiveness levels in project (Yang and Shen, 2015). Detailed analysis of the behaviours and attributes of the ESGs will help practitioners to predict the nature and extent of their influences in project. Consequently, the practitioners may consider implementing the holding, defence, compromise and concession strategies respectively on different ESGs based on the degree and nature of their predicted influences in project (Yang and Shen, 2015).

9.2.2.2.4 Evaluating Effectiveness of the Strategies

The final group is made up of two practices to monitor if the strategies implemented on the ESGs are yielding the expected results. The practitioners should first obtain feedback by gauging the mood of the ESGs, and eliciting the opinions of the ESGs at individual and group levels. Eventually, the practitioners can evaluate how the ESGs react to the strategies implemented on them. In totality, the practitioners will ably know how effective the implemented strategies on the ESGs are working.

The relationships among the groups of activities indicate that the practitioners can reiterate the process until the desired outcome is attained.

9.2.2.3 Overarching Practices of External Stakeholder Management in Projects

The overarching practices of ESM are grouped into “building sustainable relationship with stakeholders”, “respecting and involving the stakeholders”, and “effective communication”. These are further elaborated in the sub-sections below.

9.2.2.3.1 Building Sustainable Relationship with Stakeholders

Throughout all interactions with the ESGs, the practitioners must strive to promote and ensure commendable relationships with the ESGs in projects. The relationships must be beneficial to both the project and the ESGs in addressing project issues. Additionally, the practitioners must make the effort to explain the project context to the ESGs who may be from different backgrounds and not sound in construction issues. The practitioners should also clarify if the ESGs have roles to play in project like opportunities in the workforce. Further, the practitioners should obtain required assistance and support from higher management to effectively manage the ESGs who may be very influential and powerful in project. These efforts will ensure that the practitioners have sustainable relationships with the ESGs in projects.

9.2.2.3.2 Respecting and Involving the Stakeholders

Since the motive of the ESM process is to ensure equitable and beneficial project development, the ESGs must be encouraged to contribute opinions to the project decisions. The effective engagement approaches include meetings, correspondences, public forums, informal interactions and durbars. Also, the ESGs ought to own the project and feel part of it through good cooperation with the practitioners and recognition in the project. Besides, the practitioners must put in measures to promote and ensure trust and respect with the ESGs. Given the enforcement of these practices, the ESGs will be willing to provide support for the project to progress.

9.2.2.3.3 Effective Communication

First, the practitioners must ensure that the communication system adopted with the ESGs in project is two-way in nature to encourage responses. The communication must be conducted promptly in languages and at the levels corresponding with different ESGs. Second, the practitioners ought to assure the ESGs about all the potential benefits that the project could

generate in order to gain their support. Third, the practitioners must formally document all interactions with the ESGs and endorse agreements with them as well. This practice will help the practitioners to enforce agreements and manage changes in requirements properly. Fourth, the practitioners must be transparent, accountable and fair in handling the ESGs and their issues in project. The resultant practice is the effectiveness of communication with the ESGs in project.

9.2.3 Lower Subsystem: KPIs for Assessing, Benchmarking and Monitoring ESM in Project

The lower subsystem comprises six KPIs as follows: "communication effectiveness", "stakeholder support of project", "management monitoring and response", "smooth project facilitation", "conflict mitigation", and "uncertainty and risk mitigation". These KPIs have been resolved into a linear weighted additive model where the weightings represent the contributions of individual KPIs to the performance level. The sum of the weightings of KPIs is equal to unity. The output of the six KPIs denotes the level of mutual satisfaction or dissatisfaction of the ESGs at project PS. The model generalises the satisfaction or dissatisfaction level of all ESGs identified rather than focusing on separate ESGs in project. In assessing each KPI, the practitioners must use the provided measure and the percentile/score information of the five bipolar performance levels. For instance, the practitioners must compute the "percentage of identified ESGs that are averagely represented in project meetings or decision-making" as a measure for evaluating the KPI uncertainty and risk mitigation at the project PS. An average ESG representation of say 60% will mean that the uncertainty and risk mitigation level is "*good*" in project. By evaluating all the KPIs, the general satisfaction or dissatisfaction level could be determined. The outcome will further help the practitioners to objectively and reliably benchmark and monitor the ESM performance at the PS of projects.

The framework suggests that the satisfaction or dissatisfaction levels of ESGs vary across project lifecycle due to the dynamics in the ESE. Therefore, the practitioners and decision-makers can focus on optimizing values, ensuring equity by balancing the impacts and benefits, and improving the mutual satisfaction of ESGs. Thus, the framework will enable decision-makers and practitioners to revise the strategies and enhance the SM performance until the targeted mutual satisfaction extent is achieved.

9.3 VALIDATION OF EXTERNAL STAKEHOLDER MANAGEMENT FRAMEWORK

Validation is the final process in the research cycle that is undertaken to evaluate how useful a developed model or system is to the end user (Gupta, 1991; Hu et al., 2016). The preference for particular validation technique is contingent on specific research purpose (Law, 2007), as there is no formalised procedure for identifying particular validation technique (Sargent, 1991). As cited in Yeung (2007), Botten et al. (1989) stated that validation assesses how adequate, usable, accurate etc. a developed system or model is. Basically, the validation process is to confirm or improve the reliability of the performance of a model or system (Carson, 2002). Whereas verification is about "doing things right", validation covers "doing the right things" (Lucko and Rojas, 2010).

There are qualitative and quantitative approaches for conducting the validation exercise in research. The quantitative approach uses objective and statistical data to test hypothesised relationships among variables. The qualitative approach emphasizes perception-based data in the form of ideas and words (Ameyaw, 2015). Similar to Ameyaw (2015), this study adopted the qualitative validation method because the developed framework is composed of abstract constructs like "ensure stakeholder own project and feel part of it", that are extremely challenging to evaluate quantitatively. Hence, collecting perception-based information against formulated assessment

conditions appears to be more appropriate (Ameyaw, 2015). Seven validation questions covering four aspects (external, internal, construct and content validity) make up the questionnaire for assessing the credibility and quality of framework (Osei-Kyei, 2018).

The external validity has to do with the generalisation of the study's findings or model (Saunders et al., 2009; Hu et al., 2016). It assesses how the ESM framework developed could be generalised in the GCI. Additionally, the internal validity explains the derivability of relationships within dataset (Lucko and Rojas, 2010). It concerns how well the developed framework is practically understandable and user-friendly in the GCI (Osei-Kyei, 2018). Besides, the construct validity has to do with the operationalisation of the constructs of study (Saunders et al., 2009; Lucko and Rojas, 2010), and how well the research process measures what it is intended to measure (Hu et al., 2016). It assesses how comprehensive and appropriate the ESM framework is for practice (Osei-Kyei, 2017). Lastly, the content validity assesses how fairly the study's content signifies reality (Lucko and Rojas, 2010). By rightfully following the framework, content validity evaluates whether ESM practice and associated performance could be improved in the GCI (Ameyaw, 2015).

9.3.1 Design of Questionnaire for Validation Survey

Questionnaire survey was conducted on SM experts (March 2019) to validate the quality and reliability of the ESM framework in the GCI. The questionnaire comprises five sections (Appendix XI). Section A required the information on expert's background; Section B presented detailed findings of some of the best practices indicated in the framework; Section C presented the framework developed for ESM practice and performance assessment; Section D requested the experts to score their levels of agreement/disagreement with each validation question based on a five-point Likert scale of 1= "strongly disagree", 2= "disagree", 3= "neutral", 4= "agree", and 5= "strongly agree"; and Section E required the experts to provide comments to help improve and

finalise the framework. The experts were selected from the GCI based on purposive sampling with the following four criteria: (1) "knowledge and in-depth understanding of the SM concept", (2) "current/recent practical experience in ESM", (3) "ten [10] years or more construction industry experience in managing/relating/engaging with external stakeholders", and (4) "non-involvement in the development of the practical framework and relevant tools in the study" (Hu et al., 2016).

Overall, eight practitioners working in the GCI responded to the validation questionnaire. Table 9.2 presents the profile information of the responding practitioners. It can be observed that the respondents occupy senior positions within different construction organisations in the GCI. They also have adequate experiences in public and private projects, and building and civil projects. The balance in the demographic information of experts having 10 years or more experience in SM makes their responses credible, reliable and generalisable.

Table 9.2 Demographic information of experts for validation

Expert	Nature of project	Sector of client	Organisation	Position in organisation
1	Building and Civil	Private	Consultant	Director
2	Building	Private	Consultant	Principal Architect
3	Building and Civil	Public and Private	Consultant	Chief Executive (Retired)
4	Building and Civil	Public and Private	Consultant	Senior Project Manager
5	Civil	Public	Client	Senior Architect
6	Building	Public	Client	Director
7	Building	Private	Contractor	Senior Engineer
8	Building and Civil	Public	Contractor	Project Manager

Note: All the respondents are experienced practitioners working in the GCI

9.3.2 Results of the Validation Survey

Table 9.3 presents the outcomes of the validation survey on the SM experts in the GCI. It is observable that all the validation statements obtained mean values equal or above 4.00. This generally shows that the experts agree that the four validation aspects of the ESM framework are very good. The external validity was assessed with the Statements 1 and 6. The Statement 1 had

mean rating of 4.25. This means the experts *agree* that the framework comprises all the essential elements for managing ESGs in the GCI. Also, the Statement 6 obtained mean rating of 4.13, which means the experts *agree* that the framework is suitable for improving ESM practice and performance evaluation in the GCI. The internal validity was assessed with the Statements 4 and 5 which obtained respective mean scores of 4.50 and 4.25. The experts *strongly agree* (Statement 4) that the elements in the framework are appropriately grouped. Aside, the experts generally *agree* (Statement 5) that the structure and interrelationships among the elements are appropriately organised in the framework. An inference can be drawn that the derived framework is easily understandable and could be followed in the GCI.

Table 9.3 Results of framework validation survey

		Responses of experts								
No.	**Validation questions**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Mean**
1	The framework is made up of the essential elements for managing external stakeholders in the GCI.	4	4	5	5	4	5	4	3	4.25
2	The assessment system comprises appropriate KPIs to measure ESM performance (i.e. mutual satisfaction) level at project planning stage.	4	5	5	5	4	5	4	4	4.50
3	The assessment system is objective and reliable for comparing ESM performance (i.e. mutual satisfaction) levels across different project.	4	5	4	4	4	4	4	4	4.13
4	The elements in the framework are appropriately categorized.	4	4	5	4	5	5	5	4	4.50
5	The structure and interrelationships of all elements in framework are organised appropriately.	4	4	4	5	4	4	5	4	4.25
6	The overall framework is suitable for the practise of ESM and related performance assessment.	4	5	5	4	4	4	4	3	4.13
7	The practice framework will serve as a systematic reference for future work	4	4	4	5	3	4	4	4	4.00

In terms of the construct validity, the Statements 2 and 3 obtained mean scores of 4.5 and 4.13 respectively. The experts *strongly agree* that the assessment system is made up of appropriate KPIs to measure mutual ESG satisfaction in the GCI. Also, the experts *agree* that the assessment system is objective and reliable for comparing mutual ESG satisfaction in different projects. These imply that the framework is comprehensive for ESM practice in the GCI. Finally, the content validity

was assessed with the Statement 7 which scored 4.00. The experts *agree* that they are willing to adopt the derived framework as a systematic guide and reference for managing ESGs when planning projects in the future. It means that the experts consider the framework to be useful and expect to achieve ESM success when followed properly in the GCI. The assessment scores of the four validity aspects generally manifest that the derived framework is comprehensive, replicable, objective, reliable, suitable and appropriate for managing ESGs in the GCI.

9.3.3 Additional Feedback from the Experts

Besides the perception-based scale responses, the experts also gave feedback on improving the findings as following:

1. Newspaper publications, radio broadcasts and telephone conversation may not be effective. The practitioners need to consider physical presence of the ESGs in meetings for proper discussions and understand the body language of those they have identified and engaged.
2. The identification and engagement of ESGs should begin as soon as the conceptual stage of project development is underway to help incorporate some of their views.
3. Availability of financial resources and timely release of allocated resources are very essential for effective ESM. Most projects in Ghana suffer from poor financial planning leading to delays in project completion and stakeholder dissatisfaction.
4. This is a high-level starter reference guide to ESM. However, a step by step process should be included with the various KPIs and methods for measurement of performance that underscore this high-level document. A sort of working document or SM playbook with actual flow charts backed by their various tools and processes that can be used to generate the data required to be measured should be added.

9.4 CHAPTER SUMMARY

Chapter 9 presented the developed framework for ESM practice and performance assessment at the PS of construction projects in Ghana. The framework incorporates findings from literature, case studies, interviews, ordinary survey and Delphi survey. Afterward, the framework was validated in four aspects (external, construct, internal, and content validity tests) with eight experienced SM experts in the GCI. The outcomes of the survey manifest that the derived framework is generally suitable and practical for managing ESGs and assessing associated performance at the PS of projects in the GCI. Therefore, the decision-makers and practitioners should carefully follow the practices to ensure success of project planning and implementation, and also improve mutual ESG satisfaction. In Chapter 10, the conclusions are drawn and recommendations are outlined.

CHAPTER 10 CONCLUSIONS AND RECOMMENDATIONS

10.0 INTRODUCTION

In Chapter 9, the practice framework resulting from the findings was presented and validated. In the present chapter, the research conclusions are presented. Also, the significance and value of study for academia and practice are elaborated. Lastly, the limitations of study and the recommendations for improvement are outlined.

10.1 REVIEW OF RESEARCH OBJECTIVES AND CONCLUSIONS

The aim of the research study was "*to develop a framework that will serve as an industrial guide for ESM practice and associated performance assessment at the planning stage of construction projects*". Six objectives were formulated to help realise the study's aim. The objectives were accomplished through literature review, case studies, semi-structured interviews, ordinary questionnaire survey, and six rounds of Delphi questionnaire survey. The sub-sections following highlight the major outcomes and conclusions of the objectives.

10.1.1 Objective 1 Investigate the Present Practices of ESM in Construction Projects of Ghana

Comprehensive literature review was carried out on stakeholder theory development, experience of SM in developing countries, and some of the SM practices (Chapters 3 and 4). In Chapter 3, germane literature was reviewed on SM processes and practices such as stakeholder classification, analysis and engagement methods. In Chapter 4, project cases from Ghana, Nigeria and Thailand were reviewed to draw some lessons on why the projects failed. It was emphasized that the ESGs are very crucial for success especially at the PS of projects where their interests and influences are

very high. Hence, practitioners should consider ESGs in decision-making at the PS of project to ensure successful delivery and usage of projects.

In Chapter 6, semi-structured interviews were carried out on 16 experts to assess the practices adopted by practitioners in the GCI for ESM. First, the experts considered GAs to be the most difficult to manage (no. = 7), then followed by the ALCs (no. = 5) and GP stakeholders (no. = 4). The most critical underlying reasons are: (1) complicated and delayed procedures in dealing with the GAs, and (2) multiplicity and diversity of interests/needs of the ALCs and GP stakeholders in projects. The experts confirmed that the ESGs and their expectations in projects are identified through "stakeholder consultation approaches" (no. = 13), "intuition/needs assessment" (no. = 12), "surveys" (no. = 3) and "data from reliable source" (no. = 1). In terms of engaging ESGs, the most adopted approaches are "meetings" (no. = 16), "correspondences" (no. = 11), "public forums" (no. = 6), "informal interactions" (no. = 5) and "durbars" (no. = 4). Besides, practitioners prioritise the ESGs by considering the "urgency of the concerns/expectations" (no. = 8), "conformity of concerns/expectations to project scope" (no. = 8), "availability of required resources" (no. = 7), and "legitimacy of the concerns/expectations" (no. = 4).

Regarding the objectives for managing the ESGs in the GCI, "avoid or minimize stakeholder disturbances on project" (no. = 10), "eliminate or minimize risks associated with stakeholders" (no. = 6), "guarantee the project to serve its purpose fully" (no. = 5) and "gain stakeholder buy-in and cooperation for project" (no. = 3) were identified. The interviewees were asked to indicate the practical measures or strategies put in place to manage the ESGs in projects. The top practical measures suggested are "compromise to stakeholder demands within project scope" (no. = 10), "ensure that stakeholders understand the project context and their roles" (no. = 5), "manage stakeholders with social responsibilities" (no. = 4), "use effective and prompt communication

systems to reach stakeholders" (no. = 3) and "formal documentation of all stakeholder interactions" (no. = 3).

Additionally, the experts commented on the approaches used to handle the dynamics in the PSE. It was revealed that "treat every person and issue with utmost respect and fairness" (no. = 7), "establish clear project scheme to accommodate changes" (no. = 6), "proper documentation and endorsement of consensual decisions" (no. = 4) and "proactiveness and planning for long term" (no. = 3) are the most common approaches. Finally, the experts were requested to identify how they know if they are managing the ESGs well in project development. The top indicators identified are "feedback from stakeholders e.g. potential improvement in lives" (no. = 12), "level of project disturbance by stakeholders" (no. = 5) and "the extent to which stakeholder issues are resolved" (no. = 5). The results generally show that practitioners adopt practices to identify, analyse, engage, manage and monitor the expectations of the ESGs in the GCI although they are not conducted systematically and formally.

In Chapter 7, questionnaire survey was carried out on CCs to examine the practice of ESM in the GCI. The results show that the CCs practise ESM averagely in construction project development (mean = 3.07). Besides, only 32.4% of the CCs use established procedures for managing ESGs formally in construction projects. The rest of the CCs either have procedures in mind (not formally established) or do not have specific procedures at all but manage ESGs uniquely in each project. This may explain the difficulties encountered in managing ESGs in construction projects of Ghana. Finally, the CCs were required to indicate how important each of the ESGs are in project based on their attributes. In terms of interests/expectations in project, the GAs, ALCs and GP stakeholders obtained respective mean scores of 4.48 (rank = 1), 4.46 (rank = 2) and 3.83 (rank = 3). For their commitment to project, the GAs, ALCs and GP stakeholders attained mean scores of 4.56 (rank =

1), 4.39 (rank = 2) and 3.86 (rank = 3) correspondingly. Concerning their constraints about projects, the GAs, ALCs and GP stakeholders had mean scores of 4.71 (rank = 1), 4.36 (rank = 2) and 3.69 (rank = 3) respectively. Given the project constraints like cost and time, the practitioners generally pay diverse levels of attention to the three ESGs in project delivery in the GCI. However, all the three ESGs are very critical in project planning as the mean scores obtained are all above 3.00.

10.1.2 Objective 2 Identify the Main Expectations of ESGs in Project Development in the GCI

Comprehensive literature review, empirical questionnaire survey, and semi-structured interviews were used to fulfil this objective. In Chapter 5, literature was thoroughly reviewed and 24 common expectations of ESGs in construction projects were identified. It was found that the expectations have been examined in different countries and cultures. Also, there are limited studies on how the identified expectations compare among the ESGs globally, and particularly in Ghana.

The interviews were undertaken on 16 practitioners to identify the expectations that are common to each ESG in the GCI (Chapter 6). For the GAs, the expectations "economic growth and job opportunities" (no. = 7), "fulfil minimum statutory regulations and standards" (no. = 7), "environmental problems due to development" (no. = 6) and "pedestrian and vehicular traffic situation during project development" (no. = 4) were revealed. In terms of the ALCs, the most common expectations are "economic growth and job opportunities" (no. = 11), "align project with religious and cultural beliefs" (no. = 6), "environmental issues e.g. pollution of air, sound and water bodies nearby" (no. = 4) and "involvement of stakeholders in project development" (no. = 4). The top expectations of the GP stakeholders are "transparency and sharing of project information" (no. = 5), "improvement in livelihood and wellbeing" (no. = 4) and "quality/technical issues of the project deliverables" (no. = 3).

In the questionnaire survey (Chapter 7), the experts were instructed to score the degree to which they agree or disagree that the 24 expectations apply to each ESGs in construction projects of Ghana. The results show that all the expectations were significant for each ESGs (means ≥ 3.00). From the outcomes of the mean scores, the leading expectations of the GAs in projects are as follows (means ≥ 4.00): "transparency, and fulfilling regulations and standards" (4.52), "economic growth and employment generation" (4.48), "access to social/welfare facilities and location of multi-activities" (4.34), "appropriate compensation and relocation plan/strategy" (4.23), "environmental health and comfort e.g. interior hygiene" (4.04), and "prevention of pollution, flooding and erosion" (4.00). Also, the top expectations of the GP stakeholders according to the mean scores are following (means ≥ 4.00): "functionality and charges affordability to users" (4.71), "promotion of community cohesion and social equity" (4.58), "improve neighbourhood quality and stakeholder wellbeing" (4.55), "economic growth and employment generation" (4.35), "access to social/welfare facilities and location of multi-activities" (4.18), and "prevention of pollution, flooding and erosion" (4.07). Aside, the mean ranking results show that the top expectations of the ALCs are following (means ≥ 4.00): "promotion of community cohesion and social equity" (4.73), "appropriate compensation and relocation plan/strategy" (4.54), "increased use of substitute local resources e.g. materials" (4.50), "improve neighbourhood quality and stakeholder wellbeing" (4.45), "preservation of biodiversity and natural resources" (4.29), "access to social/welfare facilities and location of multi-activities" (4.11), "harmonization of project with local natural setting" (4.09), and "prevention of pollution, flooding and erosion" (4.02).

The one-sample test revealed that the means of 23 expectations of GAs, ALCs and GP respectively are statistically different when compared to the test mean of 3.00. The paired-sample tests also showed that 14 expectations between GAs and GP, 19 expectations between GAs and ALCs, and

10 expectations between GP and ALCs are statistically different. Considering the outcomes of the Spearman's (r), only the correlation of the GP-ALCs paring is statistically significant (0.520, $p < 0.05$). Thus, the most important expectations of the GP stakeholders are likely similar with the most important expectations of the ALCs in construction projects, and vice versa.

It can be inferred from the results that the expectations varied among the ESGs in terms of commonness and importance. So, the practitioners and decision-makers should consider the differences and similarities among the expectations while ensuring equitable and sustainable project delivery in the GCI.

10.1.3 Objective 3 Investigate the Obstacles Inhibiting Effective ESM at the Planning Stage of Projects in the GCI

Thorough literature review, empirical questionnaire survey, and semi-structured interviews were adopted to achieve this objective. The thorough analysis of literature resulted in 30 obstacles hindering effective ESM in construction projects (Chapter 5). The semi-structured interviews revealed that the factors "limited resources to manage stakeholder needs" (no. = 7), "exceeding demands of the stakeholders in project" (no. = 7), "ineffective consultation of stakeholders" (no. = 6), "delays and bureaucracy in getting approvals" (no. = 4) and "intrinsic religious and cultural believes e.g. pacification of deities" (no. = 4) are the most common obstacles faced by practitioners and decision-makers in managing the project ESGs (Chapter 6).

In the empirical questionnaire survey (Chapter 7), the experts were instructed to score the degree to which they considered the 30 obstacles to be critical for ESM in the GCI. By considering the mean score benchmark (mean ≥ 3.00), only 25 of the 30 factors are critical for ESM in construction projects of Ghana. The top-ranked ESM obstacles based on mean scores are as follows (means ≥ 4.00): "ineffective communication with stakeholders" (4.88), "lack of well-functioning

management strategies, methods, approach or process" (4.79), "managers lacking required knowledge, skills and experience" (4.61), "stakeholder involvement is burdensome and time-consuming" (4.48), "distrust and challenging relationships making stakeholders hold back vital information" (4.40), "project organisations pursuing self-interest at the expense of stakeholders" (4.26), "external stakeholder environment is non-transparent and difficult to analyse" (4.20), "failure to cooperate with affected and adverse stakeholders" (4.12), and "negative attitude of stakeholders towards project e.g. petitions or protests" (4.04).

Using PCFA, the 25 critical obstacles identified were further grouped into six principal factors as: (1) limited management capability, (2) stakeholder influence potential and cultural differences, (3) dynamic and uncertain stakeholder environment, (4) political actions and invisibility of stakeholders, (5) limited project knowledge and collaboration problems, and (6) stakes mal-distribution and adversarial perspectives. Enriched knowledge about these critical obstacles will help practitioners and decision-makers to be prepared and develop proactive measures in managing ESGs properly.

10.1.4 Objective 4 Investigate the CSFs for ESM at the Planning Stage of Projects in the GCI

Objective 4 was realised through comprehensive literature review, semi-structured interviews and empirical questionnaire survey carried out on CCs in the GCI. In Chapter 5, 25 SFs were identified through the analysis of past germane studies. The interviews showed that "communicate effectively and promptly with stakeholders" (no. = 10), "manage stakeholders with social responsibility" (no. = 8), "engage stakeholders properly in project" (no. = 7), "bring documented stakeholder concerns on board and analyse them" (no. = 7) and "ensure transparency and

accountability in decision-making process" (no. = 5) are the factors contributing most to ESM success (Chapter 6).

In Chapter 7, 24 CSFs were established as important for consideration in the GCI using the 3.00 mean score benchmark. The top-ranked CSFs of ESM based on mean scores are as follows (means ≥ 4.00): "involvement of stakeholders in decision-making" (4.752), "promoting and sustaining good relationship with stakeholders" (4.667), "ensuring mutual trust and respect with and among stakeholders" (4.610), "effective communication with stakeholders e.g. costs and benefits" (4.610), "identifying stakeholders properly" (4.495), "understanding areas of stakeholders' interests" (4.229), and "clearly defining project mission and objectives" (4.057).

The PCFA on the 24 CSFs identified resulted in a seven-factor solution and subjectively labelled as: (1) information gathering and continuous analysis of issues, (2) planning and undertaking responsibilities, (3) effective communication and satisfaction monitoring, (4) assessing stakeholder influence and strategizing, (5) assessing stakeholder characteristics and alternative solutions, (6) respecting and involving the stakeholders, and (7) building good relationship with stakeholders. The decision-makers and practitioners should carefully implement the CSFs to ensure that the ESM outcome (i.e. mutual satisfaction of the ESGs) is achieved or improved in the GCI.

10.1.5 Objective 5 Investigate the Measures of ESM Performance and How They Should Be Quantified at the Planning Stage of Projects in the GCI

In-depth literature review, a six-round Delphi survey and semi-structured interviews were adopted to attain this objective. In Chapter 5, the literature review produced a list of 22 potential PIs of ESM, which are equally considered the "signs and symptoms" of mutual SS in projects.

In Chapter 8, the outcomes of the six-round Delphi survey and interviews are presented. The first three rounds conducted on a panel of 38 experts established the linear weighted additive assessment model comprising the KPIs as follows: "communication effectiveness" (mean = 4.686, weighting = 0.1879), "stakeholder support of project" (mean = 4.343, weighting = 0.1741), "management monitoring and response" (mean = 4.229, weighting = 0.1695), "smooth project facilitation" (mean = 4.057, weighting = 0.1627), "conflict mitigation" (mean = 3.914, weighting = 0.1569) and "uncertainty and risk mitigation" (mean = 3.714, weighting = 0.1489). The interviews on 9 experts preliminarily validated the conceptual model and further revealed 20 unique QIs that could be potentially used to evaluate the shortlisted KPIs at the project PS in the GCI.

The final three rounds of survey were conducted on a panel of 22 experts. The experts were required to rate each QI based on "importance", "measurability" and "obtainability" attributes. The most relevant QI of communication effectiveness is "percentage of feedback on provided/received information and enquiries to/from ESGs" (mean = 4.41). For stakeholder support of project, the highest rated QI is "perception-based assessment of external stakeholder support by key stakeholders using Likert scale" (mean = 4.37). Considering management monitoring and response, the topmost rated QI is "percentage of ESG requirements that have been considered or fulfilled in project" (mean = 4.14). Also, the most useful QI for smooth project facilitation is "percentage of deadlines met due to collaboration with the external stakeholders" (mean = 4.00). Moreover, the most important QI of conflict mitigation is "percentage of disputes and disagreements involving ESGs that have been comprehensively resolved" (mean = 4.33). Lastly, the topmost ranked QI for uncertainty and risk mitigation is "percentage of identified ESGs that are averagely represented in project meetings/decision-making" (mean = 4.37).

The FST approach was used to calibrate the scales of individual QIs for the KPIs of ESM. The FQRs calibrate the QI scales into five ESM performance levels i.e. “very poor”, “poor”, “average”, “good” and “very good” levels by using percentile/scoring information. Therefore, the practitioners and decision-makers can quite objectively and reliably assess the performance of ESM (i.e. mutual ESG satisfaction) in different construction projects, and further distinguish between the five performance levels more realistically.

10.1.6 Objective 6 Develop and Validate A Framework for the Best Practice and Performance Appraisal of ESM at the Planning Stage of Projects in the GCI

Through content analysis of the research findings attained from literature review (Chapters 3 and 5), case studies from different countries (Chapter 4), semi-structured interviews (Chapter 6), ordinary questionnaire survey (Chapter 7), and Delphi questionnaire survey and interviews (Chapter 8), a framework has been developed to enhance the practise of ESM and performance assessment in the GCI (Chapter 9). The framework is basically composed of a central portion and two subsystems. The central portion shows how practitioners and decision-makers should merge the ESG expectations into the project variables, and also the challenges that could hinder the effective and prompt managerial efforts in the ESE. The upper subsystem comprises eight groups of practices that are to be implemented by the practitioners and decision-makers to ensure that the ESGs are effectively and equitably managed at the project PS. The end product of ESM is the mutual satisfaction/dissatisfaction of the ESGs in projects. The lower subsystem consists of the six KPIs to quite objectively, quantitatively and reliably assess the ESM performance level in projects. This will ensure that the mutual satisfaction level of ESGs could be benchmarked, monitored and upgraded in project development. The framework was further validated with eight practitioners in

the GCI. The outcome of the validation process witnesses that the framework is generalisable, comprehensive, reliable and realistic for ESM practice in the GCI.

10.2 CONTRIBUTIONS OF RESEARCH

The study made significant contributions which must be acknowledged to enhance future research and practice of ESM in construction projects. First, the study offers an insightful documentation of consolidated practices that are presently used by practitioners to manage ESGs in project development of Ghana and by extension other similar developing countries (e.g. identification, engagement and prioritisation approaches). This fairly fills the gap in literature about the lack of historical documentation on SM practices in the local industry (Eyiah-Botwe et al., 2016).

Second, the empirical findings provide insight into the critical issues that practitioners and decision-makers ought to grasp to make ESM at the project PS more successful. Particularly, the comparison of critical expectations of ESGs, critical obstacles hindering the efforts of managers and decision-makers, and critical factors that contribute to successful management process are very insightful upgrade to knowledge and practice. Whereas there is limited prior literature, these examined issues contribute to ESM in the contexts of developing countries and project PS especially.

There are diverse approaches suggested in literature to evaluate the satisfaction of stakeholders as a key criterion of project success. However, most of the suggested approaches are naturally subjective in that they are limited by the criteria used (e.g. Li et al., 2013). As a significant contribution, the present study thirdly offers a novel approach to model ESM performance (i.e. mutual satisfaction/dissatisfaction) in a more comprehensive, objective, reliable and practical

manner. This will help practitioners and decision-makers to conduct assessment, benchmarking and monitoring in a more systematic and novel manner across different projects.

Hitherto, the frameworks proposed in literature usually focus on "what should be done (strategies and practices) to manage stakeholders effectively" but not "how the outcomes (satisfaction or performance) of the process should be assessed reliably". Accordingly, this study additionally offers a singular framework on how decision-makers and practitioners can use best practices to manage ESGs effectively and systematically, and further assess the related performance level appropriately at the project PS. The framework indicates established relationships among the issues examined, enriching knowledge and understanding on how to improve ESM.

10.3 SIGNIFICANCE AND VALUE OF THE RESEARCH OUTCOMES

The study is significant and valuable to CEM research and industrial practice. Particularly, the findings from the objectives provide valuable implications for practice and advance research in Ghana and similar developing countries.

First, the comparative analysis provides useful insight into how the ESGs pursue diversified and correlated expectations in construction projects. The practitioners and decision-makers can adopt the findings as a proactive guide in warranting that construction projects are implemented more equitably and sustainably in Ghana. Usually, projects have constraints regarding cost and time, and it becomes difficult to fulfil all expectations of ESGs. However, it is the prime duty of the practitioners and decision-makers to ensure that there is equitable balance among the expectations of the ESGs considered in projects. Thus, practitioners and decision-makers should not focus on only the project values and benefits but instead "an equitable trade-off with the long-term costs incurred on the external stakeholders" (Chan and Oppong, 2017, p. 751). The project development

process should also focus on creating balanced values and benefits for as many stakeholders as possible instead of just the few who are prioritized as important in projects. In effect, the equitable consideration of the ESGs' expectations will enhance their mutual satisfaction level in project development.

Second, the critical obstacles identified provide an overview of the reasons underlying the infamous poor record of ESM in construction projects, particularly in developing countries. Consequently, strategic measures should be enforced at industry and project levels to improve the practise of ESM in developing countries. For instance, practitioners are greatly limited by their capacity in conducting ESM in the GCI. Accordingly, continuous professional development training should be organised to improve the knowledge and understanding of practitioners about formalised ESM practices and supporting software packages.

Third, the CSFs inform the practitioners and decision-makers on the systematic best practices to follow so as to realise success in the management of ESGs. This comes as a supplement to the current practice of ESM which is not formally established in the GCI and other developing countries. Realistically, some of the best practices may be more than what is practically needed on particular projects. Depending on the uniqueness of project, resource limitation, and decisions of practitioners, some of the best practices may be eliminated or modified without significantly affecting the outcome of the entire process. For instance, if a project has simple and obvious ESE, and very short planning duration, some of the best practices in "assessing stakeholder characteristics and alternative solutions" group could be avoided to save time and management resources. Contrarily, central practices captured under "gathering stakeholder information" should be selected and applied completely irrespective of project variances as they are very fundamental in the whole ESM process. Small size private projects may not necessarily consider analysing

alternative project solutions for the consideration of the ESGs in projects. For highly complex public projects like highways, airports, dams and bridges, all the best practices seem to be very necessary to ensure effective ESM and decision-making. Overall, the CSFs are expected to help practitioners and decision-makers translate the expectations of ESGs into resulting project net-benefits that will accrue mutual satisfaction to the same.

Fourth, the assessment system is fully operational and enables the mutual satisfaction/ dissatisfaction level of ESGs to be assessed appropriately. Mutual external SS is very subjective and naturally fuzzy due to the human cognition process. Hence, the assessment system will ensure that mutual satisfaction/dissatisfaction can be quantified in project development. Eventually, this will ensure that satisfaction levels of ESGs can be benchmarked, monitored and upgraded in project development quite objectively and reliably. Accordingly, it is expected to help improve project outcomes given that SS has become an important criterion of project success (Davis, 2016). An improved definition of mutual SS will help practitioners and decision-makers to more accurately estimate and compare project success in the GCI and similar developing countries.

Finally, the overall framework provides an opportunity for project improvement in two aspects. The first aspect is that the framework enlightens practitioners and decision-makers on how to systematically consider ESGs in project development to improve their mutual satisfaction. The second aspect is that the practitioners and decision-makers can also accurately determine how well the ESGs are mutually satisfied/dissatisfied in projects. These two aspects are highly related and help the practitioners and decision-makers to maintain or improve the mutual satisfaction of ESGs to desired levels in projects. However, decision-makers and practitioners must explore and understand the organisation, structure, groups of practices, implementation outcomes, and relationships in the framework in order to achieve this goal in real-time projects. Besides, where

the experiential knowledge of decision-makers and practitioners is temporarily lacking, the services of external consultants might be necessary to carry out some of the practices like the group of assessment activities. At the industry level as well, professional bodies must use the framework as a systematic guidelines/reference to train practitioners and subsequently improve their SM knowledge and skills. Overall, the framework will be useful for practitioners and decision-makers in improving project planning in the GCI and other developing countries sharing culture, external stakeholder structure, project features, and industry characteristics.

10.4 LIMITATIONS OF THE RESEARCH STUDY

As common with studies, the present study was undertaken with limitations that practitioners, researchers and general readers ought to know. First, only a limited number of practitioners were involved in the interviews, ordinary questionnaire survey and Delphi survey. Due to the lack of consolidated list and difficulty in reaching practitioners in the country, the respondents were drawn non-randomly using purposive and snowball sampling techniques. The reliability of the research study was drawn from the consistency of responses rather than large sample sizes extensively.

Second, the research focused on only the opinions of CCs in the GCI. This was partly because of the dominant use of the traditional project delivery system in Ghana. The CCs are greatly involved at the PS to develop project details and manage ESG expectations on behalf of clients. Hence, the findings might potentially be limited in representing the holistic view of all practitioners in the GCI.

Third, the study focused basically on general construction projects in Ghana. Due to the differences in the characteristics of local construction industries such as culture, external stakeholder structure and features, and geographic locations, the developed framework might be limited in

generalisation globally. However, sub-Saharan African countries like Nigeria, Sudan and South Africa experience homogeneous industry development issues and do share similar ESG structure like the local traditional leadership (Ofori, 2000; Dansoh et al., 2019), which might present a good ground to generalise the findings of the research in those jurisdictions upon validation.

Fourth, the entire framework has not been tested on real-time construction projects although the conceptual validation results indicate that it is comprehensive, reliable and practical for managing ESGs in the GCI. The time and cost constraints limited the research in not being validated on real-time construction projects.

Finally, as the research goal was consolidating best practices for ESM rather than drawing comparisons, the findings were obtained from general construction projects without respect for the different characterizations. Moreover, the evaluation of data may have been influenced by respondents' specific attitudes, backgrounds and project experiences. Thus, it can be hypothesized that such respondents' background and project experience differences could have significant impact on the evaluation of data and findings.

10.5 RECOMMENDATIONS FOR FUTURE STUDIES

Despite the potential of the present findings to be useful for researchers and practitioners, there are still avenues for future studies. First, the opinions of other practitioners (clients and contractors) should be considered in future works. This will improve the sampling of respondents and ensure that the findings become much more generalisable and useful in project development.

Second, the findings consolidated into the framework could be adopted and used in similar jurisdictions so that comparisons could be drawn. It is however important for prior validation studies to be conducted with experienced experts from the respective or collective similar

jurisdictions (e.g. Nigeria, Sudan and South Africa) for proper application and generalisation of the findings. With regard to dissimilar jurisdictions, the research should be replicated to develop frameworks that are suitable for practice. These will potentially deepen knowledge and understanding of the conceptual and statistical relationships among the critical expectations, critical obstacles, CSFs and KPIs in producing, assessing, benchmarking, monitoring and upgrading ESM performance levels in construction project development globally.

Third, the framework was developed to particularly suit the PS of construction projects in Ghana. Since construction projects may be unique in nature, the framework could be refined to suit different project settings such as project size and stakeholders involved. Besides, the framework could be extended to the subsequent stages of projects with the necessary modifications and validation.

Fourth, it might be complicated for the practitioners and decision-makers to conduct analysis especially on the performance levels of ESM manually in projects. The difficulties may include appropriate gathering and tracking of the required information to benchmark, monitor and assess the performance levels. Hence, future research should focus on consolidating these findings into software packages that will aid practitioners and decision-makers to easily implement the practices in projects. It will further make it easier to assess and draw comparisons with other projects without doing complicated analysis manually prone to errors.

Fifth, the developed framework could be beneficial and useful in the GCI to systematically improve ESM practice and associated performance assessment in projects. So as to guarantee that the framework is adequately systematic, robust, practical and reliable in projects, there is a need for further studies to validate it in real-time construction projects.

Finally, future studies should consider investigating the ESM issues on case study or smaller scope bases to incorporate the specific respondents' background and project experience differences in the analyses of data. Subsequently, comparative analyses could be conducted on how ESM varies between public and private projects; building and civil projects; and professionals having different backgrounds and experiences. It is believed that such comparative analyses will improve more contextual application of findings in real-time project management.

10.6 CHAPTER SUMMARY

This chapter showcased the summary of findings and major contributions to practice and research. Moreover, the contributions, values and significance of the study to research and practice have been outlined. The major limitations associated with the study were also discussed. Lastly, the recommendations for future studies in construction SM have been highlighted.

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APPENDICES

APPENDIX I

ORDINARY QUESTIONNAIRE SURVEY

Dear Sir/Madam,

Invitation to Partake in a PhD Study into External Stakeholder Management at the Construction Project Planning Stage in Ghana

I write to kindly seek your help as an experienced consultant with substantial knowledge in construction project (stakeholder) management in Ghana to complete the attached questionnaire. I am presently undertaking a funded PhD research in the Department of Building and Real Estate of the Hong Kong Polytechnic University under the supervision of Ir. Prof. Albert P.C. Chan. My research is entitled ***"External Stakeholder Management at the Planning Stage of Construction Projects in Ghana: Consultants' Perspective"***.

Presently, stakeholder satisfaction has been included in the criteria for assessing construction project success as a complement to the traditional time, quality and cost requirements. However, stakeholder satisfaction is very subjective in nature and inherently fuzzy. In the past decades, unlike other industries like manufacturing, (external) **s**takeholder management has attained poor feat in the global construction industry. A detailed exploration of the **expectations of the external stakeholders, what contributes to both failure and success**, and how performance should be evaluated are the focus of this research. Hence, your expert knowledge and experience will be extremely useful for this research in advancing externals stakeholder management in the Ghana Construction Industry (GCI).

I have prepared a questionnaire on external stakeholder management in construction projects, which is a major component of my study. In order to immensely understand the subject, I will be very appreciative if you could contribute by completing the attached questionnaire within **two weeks of receipt,** and the researcher or his assistant will collect it in person.

You can be rest assured that your anonymity will be greatly respected, and any information provided through the questionnaire will be confidentially secured and used only for academic reasons. I appreciate that you partaking in survey will significantly contribute to the study's outcome which is intended to help the GCI as well. My advisor and I are ready to disseminate the summarized findings to you at your request. Please do contact me via the emails and phone contacts stated below.

Thanking in anticipation of your kind assistance.

Sincerely,

_____

Goodenough Dennis Oppong, PhD Research Student
Ir. Professor Albert P.C. Chan, Supervisor and Head of Department
Department of Building and Real Estate
Hong Kong Polytechnic University
Emails:
Phone: _____

A Doctor of Philosophy Research Project on *"External Stakeholder Management at the Planning Stage of Construction Projects in Ghana: Consultants' Perspective"*

Introduction

This questionnaire forms part of a PhD research which aims to "*develop a framework that will serve as an industrial guide for external stakeholder management practice and performance evaluation at the planning stage of construction projects"*. The importance and need for construction stakeholder management have been acknowledged globally. However, construction stakeholder management has been ineffective and attained a poor record in the past decades, especially regarding external stakeholders. This research therefore investigates important issues that will culminate in improving external stakeholder management in construction projects.

A ***stakeholder*** is "any individual or entity that feels affected by or can affect a project, and/or has a stake in construction project delivery" (Freeman, 1984; Olander and Landin, 2008).

The ***external stakeholders*** are those who usually can affect or are affected by the project even though they do not form part of the main project coalition or provide funds (Winch and Bonke, 2002; Calvert 1995).

In this research, the external stakeholders are discussed under three main groups:

(1) *The* ***Governmental Authorities*** (e.g. National, regional and local governmental authorities, and regulatory agencies);

(2) ***The General Public*** (e.g. trade and industry, environmentalists, intervenors, end users, mass media, and pressure groups); and

(3) ***Affected Local Communities*** (e.g. schools, hospitals, neighbours, traditional authorities/chieftaincy institutions, local religious groups/deities, and local trade and industry).

Important Guidance

1) Please duly fill the questionnaire by referring to your latest practical experience(s) about stakeholder management in construction projects you've participated in.
2) Please respond to the questions by checking (☒) the appropriate boxes from the given options.
3) Kindly complete the questionnaire within **TWO WEEKS** and the researcher will pick it personally from your office.

Section A – Respondent's Background Information

1. Nature of projects you usually participate in:
   ☐ Building work ☐ Civil work ☐ Others, please specify: _____
2. Sector of the client of projects you are usually engaged in:
   ☐ Public ☐ Private ☐ Others, please specify: _____
3. Your Professional background:
   ☐ Engineer ☐ Quantity Surveyor
   ☐ Architect ☐ Project/Construction Manager
   ☐ Others, please specify: _____
4. Please state your position in the organisation: _____
5. Your level of experience in terms of managing/relating/engaging with external stakeholders in project delivery:
   ☐1-5 years ☐ 11-15 years
   ☐ 6-10 years ☐ 15-20 years
   ☐ Above 20 years

Section B – Current external stakeholder management practice in Ghana

6. Which of these descriptions best explains the external stakeholder management practice in your organisation?
   ☐ There is an established procedure for external stakeholder management in formal ways.
   ☐ There is an established procedure for external stakeholder management in mind.
   ☐ There is no established procedure. External stakeholder management is undertaken as may be appropriate for each project.
   ☐ Others, please state: _____
7. In your opinion, what is the degree to which external stakeholder management in construction project delivery is generally practised in the Ghana Construction Industry?

Poorly → Excellently				
1	2	3	4	5
☐	☐	☐	☐	☐

Section C– Key issues about external stakeholder management

8. To what degree do you consider the entities following to be important external stakeholder groups to projects you have been involved in in terms of the attributes below? Use the Likert scale from 1–5: **1 – Least important, 2 – Fairly important, 3 – Important, 4 – Very important, and 5 – Most important.**

No.	Attributes of external stakeholders	Government Authority	General Public	Affected Local Communities
1	Their interests/expectations in projects	☐1, ☐2, ☐3, ☐4, ☐5	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
2	Their commitment to project	☐1, ☐2, ☐3, ☐4, ☐5	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
3	Their constraints about project	☐1, ☐2, ☐3, ☐4, ☐5	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**

9. Drawing on your experience, please specify the level to which you agree/disagree that the factors below are the expectations that each external stakeholder group pursues in construction project delivery using the Likert scale from 1-5: **1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, and 5 – Strongly Agree.**

No.	Expectations of external stakeholders	Government Authorities	General Public	Affected Local Communities
1	Economic growth and employment generation	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
2	Green/sustainable development and energy conservation	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
3	Safety management and security	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
4	Proper traffic management during project development	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
5	Incorporating accessibility facilities for the disabled groups	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
6	Enhance indigenous people's spiritual connection with land	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
7	Preservation of biodiversity and natural resources	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
8	Improve neighbourhood quality and stakeholder wellbeing	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
9	Transparency, and fulfilling regulations and standards	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
10	Tourism attractiveness, and showcasing national identity and international reputation	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
11	Accessing and democratic sharing of project information	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
12	Prevention of pollution, flooding and erosion	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
13	Appropriate compensation and relocation plan/strategy	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
14	Increased use of substitute local resources e.g. materials	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
15	Promotion of intergenerational equity	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
16	Access to social/welfare facilities and location of multi-activities	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
17	Promoting of community cohesion and social equity	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
18	Environmental health and comfort e.g. interior hygiene	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
19	Functionality and charges affordability to users	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**

20	Harmonization of project with local natural setting	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
21	Adaptability of development to changing societal needs	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
22	Technical design e.g. aesthetics, visual permeability etc.	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
23	Involvement of stakeholders in design and planning process	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
24	Conserving local cultural and historic heritage	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
	Please indicate other expectations and rate (if any)			
25		☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
26		☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**

10. Please rate the following obstacles based on the extent to which you consider them to be critical for external stakeholder management at construction project planning stage by using the Likert scale from 1-5: **1 – "Least critical", 2 – "Fairly critical", 3 – "Critical", 4 – "Very critical", and 5 – "Most critical".**

No.	Obstacles to effective external stakeholder management	Rating
1	Negative attitude of stakeholders towards project e.g. petitions or protests	☐1, ☐2, ☐3, ☐4, ☐5
2	Unbalanced distribution of stakeholder power and interests	☐1, ☐2, ☐3, ☐4, ☐5
3	Poor perceptions of managers e.g. seeing stakeholders as enemies	☐1, ☐2, ☐3, ☐4, ☐5
4	Distrust and challenging relationships making stakeholders hold back vital information	☐1, ☐2, ☐3, ☐4, ☐5
5	Ineffective communication with stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
6	Failure to cooperate with affected and adverse stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
7	Lack of well-functioning management strategies, methods, approach or process	☐1, ☐2, ☐3, ☐4, ☐5
8	Project complexity and multiplicity of stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
9	Stakeholders obtaining support from more powerful institutions	☐1, ☐2, ☐3, ☐4, ☐5
10	Opportunistic political actions among stakeholder groups	☐1, ☐2, ☐3, ☐4, ☐5
11	Hidden/invisible stakeholders with unseen power and influential links	☐1, ☐2, ☐3, ☐4, ☐5
12	Different and competing values and beliefs of stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
13	Negative public opinion and media coverage of project	☐1, ☐2, ☐3, ☐4, ☐5
14	Stakeholders having limited knowledge of project plans and objectives	☐1, ☐2, ☐3, ☐4, ☐5
15	Managers lacking required knowledge, skills and experience	☐1, ☐2, ☐3, ☐4, ☐5
16	Project organisations pursuing self-interest at the expense of stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
17	Lack of monitoring and reporting actual conditions of affected stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
18	External stakeholder environment is non-transparent and difficult to analyse	☐1, ☐2, ☐3, ☐4, ☐5
19	Insufficient analysis of alternative project solutions and corresponding impacts	☐1, ☐2, ☐3, ☐4, ☐5
20	Managers hesitating to change predetermined proposal	☐1, ☐2, ☐3, ☐4, ☐5
21	Ambiguous instructions in stakeholder prioritization	☐1, ☐2, ☐3, ☐4, ☐5
22	Absence of comprehensive and effective stakeholder engagement process	☐1, ☐2, ☐3, ☐4, ☐5
23	Insufficient and unclear information at the early project stages	☐1, ☐2, ☐3, ☐4, ☐5
24	Insufficient resources to manage stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
25	Highly dynamic stakeholder environment	☐1, ☐2, ☐3, ☐4, ☐5
26	Excessive task conflicts that undermine collaboration	☐1, ☐2, ☐3, ☐4, ☐5
27	Misunderstanding stakeholders' conflicting interests and concerns	☐1, ☐2, ☐3, ☐4, ☐5
28	Bureaucratic and complicated permitting process	☐1, ☐2, ☐3, ☐4, ☐5
29	Stakeholder involvement is burdensome and time-consuming	☐1, ☐2, ☐3, ☐4, ☐5

30	Intrinsic (local) cultural values at variance with project plans and objectives	☐1, ☐2, ☐3, ☐4, ☐5
	Please indicate other obstacles and rate (if any)	
31		☐1, ☐2, ☐3, ☐4, ☐5
32		☐1, ☐2, ☐3, ☐4, ☐5
33		☐1, ☐2, ☐3, ☐4, ☐5

11. Please score the below factors contributing to external stakeholder management success at the project planning stage on a Likert scale from 1–5: **1 – "Least important", 2 – "Fairly important", 3 – "Important", 4 – "Very important", and 5 – "Most important".**

No.	Critical success factors for managing external stakeholders	Rating
1	Managing the external stakeholders with social responsibilities (economic, legal, ethical, environmental, and cultural)	☐1, ☐2, ☐3, ☐4, ☐5
2	Allocating sufficient resources to manage stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
3	Clearly defining project mission and objectives	☐1, ☐2, ☐3, ☐4, ☐5
4	Identifying stakeholders properly	☐1, ☐2, ☐3, ☐4, ☐5
5	Collecting adequate information about stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
6	Exploring stakeholders' needs and constraints about project	☐1, ☐2, ☐3, ☐4, ☐5
7	Acquaintance with project indigenous knowledge	☐1, ☐2, ☐3, ☐4, ☐5
8	Assessing attributes (power, urgency and proximity) of stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
9	Assessing stakeholders' behaviours e.g. cooperative potential	☐1, ☐2, ☐3, ☐4, ☐5
10	Analysing conflicts and coalitions among stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
11	Understanding areas of stakeholders' interests	☐1, ☐2, ☐3, ☐4, ☐5
12	Predicting the influence of stakeholders accurately	☐1, ☐2, ☐3, ☐4, ☐5
13	Determining the strengths and weaknesses of stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
14	In-depth and transparent analysis of all alternative project solutions	☐1, ☐2, ☐3, ☐4, ☐5
15	Compromising stakeholder conflicts through consensus building	☐1, ☐2, ☐3, ☐4, ☐5
16	Involvement of stakeholders in decision making	☐1, ☐2, ☐3, ☐4, ☐5
17	Formulating appropriate strategies to handle stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
18	Predicting stakeholders' reactions for implementing the strategies	☐1, ☐2, ☐3, ☐4, ☐5
19	Implementing the formulated strategies on stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
20	Continuous evaluation of stakeholders' satisfaction with strategies	☐1, ☐2, ☐3, ☐4, ☐5
21	Effective communication with stakeholders e.g. costs and benefits	☐1, ☐2, ☐3, ☐4, ☐5
22	Promoting and sustaining good relationship with stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
23	Ensuring mutual trust and respect with and among stakeholders	☐1, ☐2, ☐3, ☐4, ☐5
24	Obtaining support and assistance from higher authorities	☐1, ☐2, ☐3, ☐4, ☐5
25	Analysing the changes in stakeholder environment e.g. influence	☐1, ☐2, ☐3, ☐4, ☐5
	Please input and score other factors that contribute to success (if any)	
26		☐1, ☐2, ☐3, ☐4, ☐5
27		☐1, ☐2, ☐3, ☐4, ☐5

Optional: Please indicate below if you want summary of the findings.

Email address: _____ Telephone: _____

End of questionnaire. Thanks for your valuable contribution

APPENDIX II

DELPHI SURVEY QUESTIONNNAIRE: ROUND ONE

Dear Sir/Madam,

Invitation to Partake in a PhD Study into External Stakeholder Management at the Construction Project Planning Stage in Ghana

I write to kindly seek your help as an experienced practitioner with substantial knowledge in construction project (stakeholder) management in Ghana to participate in this Delphi Survey. I am presently undertaking a funded PhD study in the Department of Building and Real Estate of the Hong Kong Polytechnic University under the supervision of Ir. Prof. Albert P.C. Chan. My research is entitled ***"External Stakeholder Management at the Planning Stage of Construction Projects in Ghana: Consultants' Perspective"***.

Presently, stakeholder satisfaction has been included in the criteria for assessing the success of construction projects as a complement to the traditional time, quality, and cost requirements. Stakeholder satisfaction is however very subjective in nature and inherently fuzzy. In the past decades, unlike other industries like manufacturing, (external) **s**takeholder management has poorly performed in the construction industry. A detailed understanding of how **external stakeholder management performance should be evaluated** is the purpose of this study. The specific objective is to establish an **External Stakeholder Management Performance Index (ESMPI)**, and the corresponding **Quantitative Indicators (QIs) and Quantitative Requirements (QRs)** [terms explained in the questionnaire guide]. Your expertise is hereby acknowledged in terms of having (1) "knowledge and in-depth understanding of the stakeholder management concept", (2) "current/recent practical experience in construction stakeholder management", and (3) "extensive involvement in construction project management generally". Hence, your expert knowledge and experience will be extremely useful for this research in advancing external stakeholder management in the Ghana Construction Industry (GCI) and other industries where applicable.

This stage of the study uses **a three-round Delphi survey** so you can share your opinions and practical experiences with us. The Delphi technique is a structured interaction and consensus building process among a collection of experts to investigate phenomena or solve problems. In this method, the consensus is attained through rounds of experts' opinions on a specific phenomenon interspersed with group feedback. Unlike ordinary questionnaire survey, the Delphi method seeks to use the collective wisdom of experts to reach improved decisions through a number of rounds of questionnaire survey. This is **Round 1**, and in the Rounds 2 and 3, you'll receive the collective feedback of all participating practitioners from the Round 1, and additionally be asked to review your prior perceptions based on the collective experts' opinions. I will be very appreciative if you could participate by completing the questionnaire in each round to ensure convergence in the outcome. The questionnaires are designed very simple to take about **15 minutes** of your time in each round, and thus, the entire process should take about **45 minutes** of your valuable time.

The entire duration of your participation is expected to be within **three months (from mid-March to mid-June 2017)**. You will be requested to complete and return each Delphi questionnaire within **TWO WEEKS** from issue date. The researcher will have one week between successive rounds of questionnaire survey to compile and evaluate experts' opinions and reissue subsequent questionnaires to all the experts.

You can be rest assured that your anonymity will be greatly honoured, and any data collected through the survey shall be confidentially secured and used for academic reasons only. I appreciate that you partaking in survey will significantly contribute to the study's outcome which is intended to enhance research and practice in the GCI. Please do contact me via the contact information provided. I would also be very grateful if you could recommend other able and willing practitioner(s) to participate in this Delphi Surveys.

Thanking in anticipation of your kind assistance.
Sincerely,

Goodenough Dennis Oppong, PhD Research Student
Ir. Prof. Albert P.C. Chan, Head of Building and Real Estate Department, The Hong Kong Polytechnic University
Emails:
Contact: _____

DELPHI SURVEY: ROUND ONE (1)

Guidance on completion

Thanks a lot for your participation by helping to identify Key Performance Indicators (KPIs) to assess external stakeholder management performance level at construction project planning stage. Twenty-two (22) performance indicators (PIs) have been consolidated from germane literature and also received valuable comments from experts around the world. You are encouraged to add more PIs where deemed appropriate in the last rows. **Please select and rate not less than 5 and not more than 10 PIs (by checking the proper boxes), which you consider as the most useful/important KPIs for assessing external stakeholder management performance level at construction project planning stage**. Before proceeding to the questionnaire, the following notes on KPIs may be a very useful reference.

NOTE 1:
The KPI system is designed to help measure the performance of projects and organisations in the construction industry. It will then be useful for benchmarking and upgrading the performance of projects and organisations in the industry (The KPI Working Group, 2000). The following guidelines were adapted for consideration in designing KPIs of external stakeholder management (Collin, 2002):

1. KPIs should be general indicators relating to critical aspects of stakeholder management outcome (performance).
2. KPIs must be a few and manageable in number for regular use.
3. KPIs must be used systematically on projects to derive optimum value.
4. The collection of data on KPIs must be simple.
5. KPIs must be developed for use on multiple projects as larger sample size minimizes the effect of project specific variables.
6. For effectiveness, KPIs must be recognised, accepted and properly interpreted across organisation.

NOTE 2

a. Please the selection of the most appropriate KPIs **should be applicable and measurable at the planning stage of construction projects as much as possible** to be useful for the purpose of study. In this study, the planning stage includes the idea conception and all other activities prior to actual construction.
b. Also, the selection of the appropriate KPIs **should be focused on external stakeholder management** to meet the purpose of the study.

The ***external stakeholders*** are those who usually can affect or are affected by the project even though they do not form part of the main project coalition or provide funds (Calvert 1995; Winch and Bonke, 2002).

In this research, the external stakeholders are discussed under three main groups: (1) ***The Governmental Authorities*** (e.g. national, regional and local government authorities, and regulatory agencies); (2) ***The General public*** (e.g. trade and industry, environmentalists, intervenors, end users, mass media, and pressure groups); and (3) ***Affected Local Communities*** (e.g. schools, hospitals, neighbours, traditional authorities/chieftaincy institutions, local religious groups/deities, and local trade and industry).

Your participation is expected to last about **15 minutes** in this round. Kindly fill the questionnaire within **TWO WEEKS** upon receipt**,** and the researcher or his assistant will pick it from your office personally.

Section A – Respondent's Background Information

1. Name of Practitioner: _____
2. Organisation: _____
3. Professional background:
   ☐ Engineer ☐ Quantity Surveyor
   ☐ Architect ☐ Project/Construction Manager
   ☐ Others, please specify _____
4. Please state your position in the organisation: _____
5. Nature of projects you usually participate in:
   ☐ Building work ☐ Civil work ☐ Others, please specify: _____
6. Sector of the client of projects you are usually engaged in (where applicable):
   ☐ Public ☐ Private ☐ Others, please specify: _____
7. Your level of practice experience in managing/relating/engaging with external stakeholders.
   ☐1-5 years ☐ 11-15 years
   ☐ 6-10 years ☐ 16-20 years
   ☐ Above 20 years
8. Contact: _____ Email: _____

Section B: The Performance Indicators for Managing Stakeholders in Construction Project Delivery

Please select and rate only **5 to 10 performance indicators** inclusively that are most useful measures of **external stakeholder management performance level at the construction project planning stage**. Kindly score the importance level of the KPIs by using the Likert scale described below as:

1 = "Least important", 2 = "Fairly important", 3 = "Important", 4 = "Very important", and 5 = "Most important".

NOTE: Please see in Appendix 1 below (after this Table) the description for each performance indicator where clarity is required.

No.	Stakeholder management performance indicators	Your option	Please rate your selected KPIs in this Round (1)
1	Stakeholder empowerment	☐	☐1, ☐2, ☐3, ☐4, ☐5
2	Management monitoring and response	☐	☐1, ☐2, ☐3, ☐4, ☐5
3	Stakeholder relational benefits	☐	☐1, ☐2, ☐3, ☐4, ☐5
4	Better service delivery	☐	☐1, ☐2, ☐3, ☐4, ☐5
5	Stakeholder rights protection	☐	☐1, ☐2, ☐3, ☐4, ☐5
6	Innovation enhancement	☐	☐1, ☐2, ☐3, ☐4, ☐5
7	Mutual learning	☐	☐1, ☐2, ☐3, ☐4, ☐5
8	Public image creation	☐	☐1, ☐2, ☐3, ☐4, ☐5
9	Stakeholder capital building	☐	☐1, ☐2, ☐3, ☐4, ☐5
10	Smooth project facilitation	☐	☐1, ☐2, ☐3, ☐4, ☐5
11	Sustainable lifecycle performance	☐	☐1, ☐2, ☐3, ☐4, ☐5
12	Enhanced organisational motivation	☐	☐1, ☐2, ☐3, ☐4, ☐5
13	Uncertainty and risk mitigation	☐	☐1, ☐2, ☐3, ☐4, ☐5
14	Conflict mitigation	☐	☐1, ☐2, ☐3, ☐4, ☐5

15	Improved organisational foresight	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
16	Stakeholder support of project	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
17	Trust and respect in relationship	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
18	Implementing collective agreements	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
19	Partnerships and collaborations	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
20	Cost savings	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
21	Potential for marketplace success	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
22	Communication effectiveness	☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
	Please enter and select other performance indicators (if you consider them more appropriate)		
23		☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
24		☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**
25		☐	☐**1**, ☐**2**, ☐**3**, ☐**4**, ☐**5**

Appendix 1: The Descriptions of the Performance Indicators in Q9 (Table Just Above).

No.	Performance Indicators	Description of each indicator
1	Stakeholder empowerment	Rational empowerment of multi-stakeholders to participate, make contributions and influence project decisions
2	Management monitoring and response	Effective monitoring and prompt (timely) response to stakeholders' concerns in project development
3	Stakeholder relational benefits	Enhancement of stakeholders' value, relational wealth, quality of life, and satisfaction through harmonious relationship
4	Better service delivery	Improvement in service delivery to meet needs and requirements of stakeholders
5	Stakeholder rights protection	Protection of individual and minority rights when stakeholders are given equal opportunities in project development
6	Innovation enhancement	Improvement in innovative strategies and solutions in project development
7	Mutual learning	Joint learning extending from the project organisation to all stakeholders and resulting in better understanding of project purpose and scope
8	Public image creation	General perception of positive or negative project image among multi-stakeholders
9	Stakeholder capital building	Social capital built through trust and relationship; intellectual capital built through mutual understanding and shared problem frames; and political capital built through working together for mutual ends
10	Smooth project facilitation	Project processes running smoothly where stakeholders are properly engaged and managed, thus, limited disruption of project progress by stakeholders
11	Sustainable lifecycle performance	Sustainability of the net benefits of project accruing to the multi-stakeholders in the long run
12	Enhanced organisational motivation	The drive of organisations to implement projects efficiently and effectively especially when stakeholder buy-in is gained
13	Uncertainty and risk mitigation	Minimization of uncertainty and potential risks by giving necessary attention to relevant stakeholders particularly at the construction project planning stage
14	Conflict mitigation	Minimization of destructive conflicts of interests among stakeholders through effective consensus building
15	Improved organisational foresight	Organisations are proactive and have greater foresight on upcoming issues that could benefit or distract project

16	Stakeholder support of project	Stakeholders accepting project purpose and readily providing required support
17	Trust and respect in relationship	Mutual stakeholder trust and respect gained through effective and harmonious project relationship management
18	Implementing collective agreements	Implementation of high-quality agreements that are collectively reached with multi-stakeholders
19	Partnerships and collaborations	Generation of long-term spin-off partnerships and collaboration with stakeholders
20	Cost savings	Beneficial cost savings where the stakeholders are properly identified and their needs/requirements considered early in project planning process
21	Potential for marketplace success	Identification of new business opportunities to ensure stronger market positioning and marketplace success through stakeholder engagement
22	Communication effectiveness	The frequency or extent to which quality project information is made available and exchanged among the multi-stakeholders

Optional: Please indicate below if you want summary of the findings.

☐ Yes ☐ No

Thanks for participating

APPENDIX III

DELPHI SURVEY QUESTIONNNAIRE: ROUND TWO

Doctor of Philosophy (PhD) Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

DELPHI SURVEY: ROUND TWO (2)

A Survey of Identifying KPIs to Assess the Performance of External Stakeholder Management at the Construction Project Planning Stage

Guidance on completion

I would like to appreciate you for partaking in the 1st round of survey which forms a very important basis for this present round **(Round 2)**. Below are the results gotten from all participants in the 1st round of the captioned research. The experts' selection proportions and mean scores of the performance indicators are shown in the Columns 3 and 4 respectively. Your Round 1 options and scores are shown in the Column 5. Please it is necessary to know whether with further consideration (and also given that new indicator has been added by the experts), you would like to make any changes to your options selection and ratings in the first round. Hence, I will be very appreciative if you could again **select not less than 5 and not more than 10 KPIs which you consider to be most useful/important to assess the external stakeholder management performance level at the construction project planning stage, and further rate their levels of importance**. Please refer to the very useful Notes 1 and 2 before proceeding to the questionnaire.

Section A: The Performance Indicators for External Stakeholder Management at the Construction Project Planning Stage

Upon considering your options and ratings in the previous round, please select **5 to 10 performance indicators inclusively** that are useful measures of **external stakeholder management performance at the construction project planning stage**. Afterwards, kindly score the importance level of the KPIs by using the Likert scale described as:

1 = "Least important", 2 = "Fairly important", 3 = "Important", 4 = "Very important", and 5 = "Most important".

NOTE: Please see in Appendix 1 below (same from Round 1) the description for each performance indicator where clarity is required.

Practitioner's name: _____Organisation: _____

Phone contact: _____ Email: _____

No.	Stakeholder management performance indicators	% of experts (1st Round)	Mean Scores (1st Round)	Your option and scoring (1st Round)	Your option (2nd Round)	Please rate your selected KPIs in the 2nd Round
1	Stakeholder empowerment	52.63%	4.05		☐	☐1, ☐2, ☐3, ☐4, ☐5
2	Management monitoring and response	63.16%	4.42		☐	☐1, ☐2, ☐3, ☐4, ☐5
3	Stakeholder relational benefits	15.79%	4.00		☐	☐1, ☐2, ☐3, ☐4, ☐5
4	Better service delivery	44.74%	4.47		☐	☐1, ☐2, ☐3, ☐4, ☐5
5	Stakeholder rights protection	34.21%	4.00		☐	☐1, ☐2, ☐3, ☐4, ☐5
6	Innovation enhancement	18.42%	3.57		☐	☐1, ☐2, ☐3, ☐4, ☐5
7	Mutual learning	15.79%	3.67		☐	☐1, ☐2, ☐3, ☐4, ☐5
8	Public image creation	34.21%	3.77		☐	☐1, ☐2, ☐3, ☐4, ☐5

9	Stakeholder capital building	26.32%	4.00		☐	☐1, ☐2, ☐3, ☐4, ☐5
10	Smooth project facilitation	55.26%	4.24		☐	☐1, ☐2, ☐3, ☐4, ☐5
11	Sustainable lifecycle performance	31.58%	4.33		☐	☐1, ☐2, ☐3, ☐4, ☐5
12	Enhanced organisational motivation	18.42%	3.86		☐	☐1, ☐2, ☐3, ☐4, ☐5
13	Uncertainty and risk mitigation	57.89%	3.91		☐	☐1, ☐2, ☐3, ☐4, ☐5
14	Conflict mitigation	47.37%	3.78		☐	☐1, ☐2, ☐3, ☐4, ☐5
15	Improved organisational foresight	10.53%	4.00		☐	☐1, ☐2, ☐3, ☐4, ☐5
16	Stakeholder support of project	68.42%	4.19		☐	☐1, ☐2, ☐3, ☐4, ☐5
17	Trust and respect in relationship	28.95%	4.36		☐	☐1, ☐2, ☐3, ☐4, ☐5
18	Implementing collective agreements	21.05%	4.38		☐	☐1, ☐2, ☐3, ☐4, ☐5
19	Partnerships and collaborations	15.79%	4.33		☐	☐1, ☐2, ☐3, ☐4, ☐5
20	Cost savings	36.84%	4.57		☐	☐1, ☐2, ☐3, ☐4, ☐5
21	Potential for marketplace success	7.89%	4.67		☐	☐1, ☐2, ☐3, ☐4, ☐5
22	Communication effectiveness	84.21%	4.44		☐	☐1, ☐2, ☐3, ☐4, ☐5
23	*Better scope definition*	*2.63%*	5.00		☐	☐1, ☐2, ☐3, ☐4, ☐5

End of questionnaire. Thanks for your valuable contribution

APPENDIX IV

DELPHI SURVEY QUESTIONNNAIRE: ROUND THREE

Doctor of Philosophy (PhD) Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

DELPHI SURVEY: ROUND THREE (3)

A Survey of Identifying KPIs to Assess the Performance of External Stakeholder Management at the Construction Project Planning Stage

Guidance on form completion

I would like to appreciate you for partaking in the preceding two rounds of the Delphi survey, which form a very important basis for this round **(Round 3).** The consolidated outcomes of the round two of the captioned study are shown in the table below. The experts' selection proportions and mean scores of the performance indicators are shown in the Columns 3 and 4 respectively. Please see in Appendix 1 below (same from Round 1) the description for each performance indicator where clarity is required. Please take note that only the KPIs which have met the majority threshold [selected by at least 50% of the experts] are in the unshaded region. Therefore, you are required to rate the six (6) most useful KPIs from all the experts [and also reconsider revising your ratings in the Round two where applicable] in the Column 6.The focus of this round is for you to rate all the selected KPIs based on the extent to which you consider them important in **assessing external stakeholder management performance level at the construction project planning stage** by using the Likert scale of **1 = "Least important", 2 = "Fairly important", 3 = "Important", 4 = "Very important", and 5 = "Most important".**

Practitioner's name: _____Organisation: _____

Contact: _____ Email: _____

No.	Selected KPIs for external stakeholder management performance	% of experts (2nd Round)	Mean Scores (2nd Round)	Your scores (2nd Round)	Your scores (3rd Round)
KPI 1	Communication effectiveness	**94.59%**	**4.46**		☐1, ☐2, ☐3, ☐4, ☐5
KPI 2	Management monitoring and response	**83.78%**	**4.35**		☐1, ☐2, ☐3, ☐4, ☐5
KPI 3	Stakeholder support of project	**81.08%**	**4.27**		☐1, ☐2, ☐3, ☐4, ☐5
KPI 4	Smooth project facilitation	**56.76%**	**4.00**		☐1, ☐2, ☐3, ☐4, ☐5
KPI 5	Uncertainty and risk mitigation	**54.05%**	**3.80**		☐1, ☐2, ☐3, ☐4, ☐5
KPI 6	Conflict mitigation	***51.35%***	**3.84**		☐1, ☐2, ☐3, ☐4, ☐5
	Better service delivery	48.65%	3.83		
	Stakeholder rights protection	48.65%	3.89		
	Cost saving	43.24%	4.00		
	Stakeholder empowerment	43.24%	3.75		
	Trust and respect in relationship	40.54%	3.93		
	Public image creation	35.14%	3.54		
	Sustainable lifecycle performance	32.43%	4.00		
	Better scope definition	24.32%	4.22		
	Implementing collective agreements	21.62%	4.50		
	Enhanced organisational motivation	18.92%	3.71		
	Partnerships and collaborations	18.92%	3.00		
	Stakeholder capital building	16.22%	4.00		
	Innovation enhancement	13.51%	3.80		
	Potential for marketplace success	13.51%	3.60		
	Stakeholder relational benefits	13.51%	3.60		
	Mutual learning	8.11%	4.33		
	Improved organisational foresight	5.41%	4.50		

Optional: Please indicate below if you want summary of the findings.

☐ Yes ☐ No

Thanks for participating and contributing your experiential knowledge

APPENDIX V

DELPHI SURVEY: SEMI-STRUCTURED INTERVIEW GUIDE

Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

SEMI-STRUCTURED INTERVIEW TEMPLATE

Interview Guide for Developing Quantitative Indicators (QIs) for the KPIs to Assess the Performance level of External Stakeholder Management at the Construction Project Planning Stage

The purpose of the interview is to establish the QIs suitable for each of the top-weighted KPIs of external stakeholder management. Please, the **QIs to be developed should be important, obtainable and measurable so that a fully operational assessment system can be eventually derived for practice**.

Interviewee: _____ Time and Date: _____

Position: _____ Venue: _____

Contact: _____ Years of experience: _____

Interviewer: _____ Record taken by: _____

Upon conducting the first three-rounds of Delphi survey on experienced practitioners around the country on the captioned topic, the following index has been developed for computing external stakeholder management performance in projects of the Ghana Construction Industry (GCI). The weighting of each KPI was computed by normalizing i.e. dividing its mean score by the sum of all the mean scores of the six (6) KPIs.

$$Index = (0.1879 \times \text{Communication effectiveness}) + (0.1741 \times \text{Stakeholder support of project}) + (0.1695 \times \text{Management monitoring and response}) + (0.1627 \times \text{Smooth project facilitation}) + (0.1569 \times \text{Conflict mitigation}) + (0.1489 \times \text{uncertainty and risk mitigation})$$

1. Please what is your opinion on the model? Does it properly represent a comprehensive measure of external stakeholder management performance (i.e. mutual satisfaction) at the construction project planning stage in the GCI with regards to (1) the number of top KPIs shortlisted, (2) the relative weightings assigned to the KPIs, and (3) the form of model adopted?
2. Please propose about **two most useful QIs** to assess each of the **shortlisted six (6) KPIs** of external stakeholder management at the construction project planning stage, indicated in the Table below. Please comment on how important, measurable and obtainable your suggested QIs are. Kindly give examples to demonstrate how the QIs should be used to evaluate the corresponding KPIs.

S/No.	Selected KPIs for external stakeholder management performance
KPI 1	Communication effectiveness
KPI 2	Stakeholder support of project
KPI 3	Management monitoring and response
KPI 4	Smooth project facilitation
KPI 5	Conflict mitigation
KPI 6	Uncertainty and risk mitigation

Optional: Please indicate below if you want summary of the findings.

☐ Yes ☐ No

Thanks for partaking in the study

APPENDIX VI

DELPHI SURVEY QUESTIONNNAIRE: ROUND FOUR

Dear Sir/Madam,

Invitation to Partake in a PhD Study into External Stakeholder Management at the Construction Project Planning Stage in Ghana

I write to kindly seek your help as an experienced practitioner with substantial knowledge in construction project (stakeholder) management in Ghana to participate in this Delphi Survey. I am presently undertaking a funded PhD study in the Department of Building and Real Estate of the Hong Kong Polytechnic University under the supervision of Ir. Prof. Albert P.C. Chan. My research is entitled ***"External Stakeholder Management at the Planning Stage of Construction Projects in Ghana: Consultants' Perspective"***.

A detailed understanding of how **external stakeholder management performance should be assessed** is the focus of this research objective. Upon previously undertaking 3 rounds of Delphi survey on experienced practitioners in the Ghana Construction Industry (GCI), an **External Stakeholder Management Performance Index (ESMPI)** has been developed using the 6 shortlisted KPIs. Further face-to-face interviews with 9 experienced practitioners have been able to generate Quantitative Indicators (QIs) for each KPI to help measure external stakeholder management performance objectively. At this stage, the interest is on the rating of the **Quantitative Indicators (QIs)** and a further assigning of **Quantitative Requirements (QRs)** [terms explained in the questionnaire guide].

Your expertise is hereby acknowledged in terms of having (1) "knowledge and in-depth understanding of the stakeholder management concept", (2) "current/recent practical experience in construction stakeholder management", and (3) "extensive involvement in construction project management generally". Hence, your expert knowledge/experience in the GCI will be extremely useful.

This stage of the study uses **a three-round Delphi survey** so you can share your opinions and practical experiences with us. The Delphi technique is a structured interaction and consensus building process among a collection of experts to investigate phenomena or solve problems. In this method, the consensus is attained through rounds of experts' opinions on a specific phenomenon interspersed with group feedback. Unlike ordinary questionnaire survey, the Delphi method seeks to use the collective wisdom of experts to reach improved decisions through a number of rounds of questionnaire survey. This is **Round 1**, and in the Rounds 2 and 3, you'll receive the collective feedback of all participating practitioners from the Round 1, and additionally be asked to review your prior perceptions based on the collective experts' opinions. I will be very appreciative if you could participate by completing the questionnaire in each round to ensure convergence in the outcome. The questionnaires are designed very simple to take about **15 minutes** of your time in each round, and thus, the entire process should take about **45 minutes** of your valuable time.

The entire duration of your participation is expected to be within **three months (from mid-July to mid-October 2017)**. You will be requested to complete and return each Delphi questionnaire within **TWO WEEKS** from issue date. The researcher will have one week between successive rounds of questionnaire survey to compile and evaluate experts' opinions and reissue subsequent questionnaires to all the experts.

You can be rest assured that your anonymity will be greatly honoured, and any data collected through the survey shall be confidentially secured and used for academic reasons only. I appreciate that you partaking in survey will significantly contribute to the study's outcome which is intended to enhance research and practice in the GCI. Please do contact me via the contact information provided. I would also be very grateful if you could recommend other able and willing practitioner(s) to participate in this Delphi Surveys.

Thanking in anticipation of your kind assistance.

Sincerely,

G.D.O

Goodenough Dennis Oppong, PhD Research Student
Ir. Prof. Albert P.C. Chan, Supervisor and Head of Department
Department of Building and Real Estate, The Hong Kong Polytechnic University
Emails:
Contact:

Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

DELPHI SURVEY: ROUND FOUR (4)

A Survey of Establishing the Quantitative Indicators (QIs) of the Key Performance Indicators (KPIs) to Assess the Performance Level of External Stakeholder Management at the Construction Project Planning Stage

Guidance on form completion

Thank you for agreeing to partake in the research. Kindly contribute to this study by completing and returning questionnaire to the researcher within **TWO WEEKS**. The eventual outcome of the preceding three Delphi survey rounds are presented in the below table. The mean scores and corresponding weightings of the KPIs derived are presented in the columns 2 and 3. The weighting of each KPI was computed by dividing its mean score by the sum of all the mean scores of the KPIs. Upon developing the most vital KPIs through three rounds of survey, the following formula for computing external Stakeholder Management Performance Index (SMPI) has been thus established.

$$\begin{aligned} Index = {} & (0.1879 \times \text{Communication effectiveness}) + (0.1741 \times \text{Stakeholder support of project}) \\ & + (0.1695 \times \text{Management monitoring and response}) \\ & + (0.1627 \times \text{Smooth project facilitation}) + (0.1569 \times \text{Conflict mitigation}) \\ & + (0.1489 \times \text{uncertainty and risk mitigation}) \end{aligned}$$

Shortlisted KPIs for External Stakeholder Management	Overall Mean Scores in the Round 3	Corresponding Weightings
KPI 1: Communication effectiveness	4.686	0.1879
KPI 2: Stakeholder support of project	4.343	0.1741
KPI 3: Management monitoring and response	4.229	0.1695
KPI 4: Smooth project facilitation	4.057	0.1627
KPI 5: Conflict mitigation	3.914	0.1569
KPI 6: Uncertainty and risk mitigation	3.714	0.1489

Please refer to the very useful Notes 1, 2 and 3 before proceeding to the questionnaire.

NOTE 1:

The KPI system is designed to help measure the performance of projects and organisations in the construction industry. It will then be useful for benchmarking and upgrading the performance of projects and organisations in the industry (The KPI Working Group, 2000). The following guidelines were adapted for consideration in designing KPIs of external stakeholder management (Collin, 2002):

1. KPIs should be general indicators relating to critical aspects of stakeholder management outcome (performance).
2. KPIs must be a few and manageable in number for regular use.
3. KPIs must be used systematically on projects to derive optimum value.
4. The collection of data on KPIs must be simple.
5. KPIs must be developed for use on multiple projects as larger sample size minimizes the effect of project specific variables.
6. For effectiveness, KPIs must be recognised, accepted and properly interpreted across organisation.

Note 2: Description of the Selected Key Performance Indicators

Performance Indicators	Description of the Six Performance Indicators
KPI 1: Communication effectiveness	The frequency or extent to which quality project information is made available and exchanged among the multi-stakeholders
KPI 2: Stakeholder support of project	Stakeholders accepting project purpose and readily providing required support
KPI 3: Management monitoring and response	Effective monitoring and prompt (timely) response to stakeholders' concerns in project development
KPI 5: Smooth project facilitation	Project processes running smoothly where stakeholders are properly engaged and managed, thus, limited disruption of project progress by stakeholders
KPI 6: Conflict mitigation	Minimization of destructive conflicts of interests among stakeholders through effective consensus building
KPI 4: Uncertainty and risk mitigation	Minimization of uncertainty and potential risks by giving necessary attention to relevant stakeholders particularly at the construction project planning stage

NOTE 3
In this study, ***the planning stage includes the idea conception and all other activities prior to actual construction***.

The ***external stakeholders*** are those who usually can affect or are affected by the project even though they do not form part of the main project coalition or provide funds (Calvert 1995; Winch and Bonke, 2002).

In this research, the external stakeholders are discussed under three main groups:

(1) ***The Governmental Authorities*** (e.g. national, regional and local government authorities, and regulatory agencies);

(2) ***The General public*** (e.g. trade and industry, environmentalists, intervenors, end users, mass media, and pressure groups); and

(3) ***Affected Local Communities*** (e.g. schools, hospitals, neighbours, traditional authorities/chieftaincy institutions, local religious groups/deities, and local trade and industry).

Section A – Background Information

1. Name of Practitioner:_____
2. Organisation:_____
3. Professional background:
   ☐ Engineer ☐ Quantity Surveyor
   ☐ Architect ☐ Project/Construction Manager
   ☐ Others, please specify_____
4. Please state your position in the organisation: _____
5. Nature of projects you usually participate in:
   ☐ Building work ☐ Civil work ☐ Others, please specify:_____
6. Sector of the client of projects you are usually engaged in (where applicable):
   ☐ Public ☐ Private ☐ Others, please specify: _____

7. Your level of practice experience in managing/relating/engaging with external stakeholders:
   ☐1-5 years ☐ 11-15 years
   ☐ 6-10 years ☐ 16-20 years
   ☐ Above 20 years
8. Contact: _____ Email:_____

Section B: Rating of the Quantitative Indicators (QIs) of the Key Performance Indicators (KPIs) for Evaluating External Stakeholder Management in Construction Project Delivery

In the Table are the QIs identified upon interviewing leading local practitioners to assess the six (6) shortlisted KPIs and further assess the overall external stakeholder management performance level at the planning stage of projects in Ghana. To verify the appropriateness of the QIs, you are cordially requested to make contribution by completing the questionnaire. The appropriateness of the QIs is assessed by their **levels of "importance", "measurability", and "obtainability"**. These three vital dimensions reflect how significant and practical the QIs are to assess the corresponding KPIs. Please you are encouraged to suggest and rate extra QI(s) in the last rows of each KPI where found suitable. Please rate the QIs (inclusive of new inserted QIs) under each KPI based on a 5-point Likert scale against their "importance", "measurability" and "obtainability".

For rating the Importance Level: **1 = "Very unimportant", 2 = "Unimportant", 3 = "Neutral", 4 = "Important", and 5 = "Very important"**.

For rating the Measurability Level, **1 = "Very difficult to measure", 2 = "Difficult to measure", 3 = "Neutral", 4 = "Easy to measure", and 5 = "Very easy to measure".**

For rating the Obtainability Level, **1 = "Very difficult to obtain", 2 = "Difficult to obtain", 3 = "Neutral", 4 = "Easy to obtain", and 5 = "Very easy to obtain".**

Quantitative Indicators (QIs) for Assessing the Shortlisted KPIs of External Stakeholder Management Performance		**Importance**	**Measurability**	**Obtainability**
No.	KPI 1: Communication effectiveness			
QI 1	Perception-based assessment of communication effectiveness by key stakeholders using Likert scale (e.g. scoring from very poor to very good).			
QI 2	Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.			
QI 3	Percentage of timely feedback on provided/received information and enquiries to/from external stakeholder groups (i.e. meeting agreed schedule e.g. 2 weeks).			
QI 4				
QI 5				
	KPI 2: Stakeholder support of project			
QI 1	Percentage of specific practice suggestions made by external stakeholder groups that have been adopted in whole or part.			
QI 2	Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good).			
QI 3	Extent of project delay due to external stakeholder protest/controversy (percentage of projected planning stage time).			
QI 4	Percentage of representatives of identified external stakeholder groups who are in support of project purpose and objectives.			
QI 5				

QI 6				
	KPI 3: Management monitoring and response			
QI 1	Average time taken to address the requirements of external stakeholders (in terms of weeks).			
QI 2	Percentage of external stakeholder group requirements that have been considered or fulfilled in project.			
QI 3	Perception-based assessment of management monitoring and response by key stakeholders using Likert scale (e.g. scoring from very poor to very good).			
QI 4	Frequency of monitoring and evaluating external stakeholder requirements fulfilment in project progress [e.g. through meetings, opinion polls etc.] (average in terms of weeks).			
QI 5				
QI 6				
	KPI 4: Smooth project facilitation			
QI 1	Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder).			
QI 2	Percentage of decisions readdressed due to lack of collaboration with the external stakeholders.			
QI 3	Perception-based assessment of efficiency of project facilitation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).			
QI 4				
QI 5				
	KPI 5: Conflict mitigation			
QI 1	Average number of disputes and disagreements occurrence related to external stakeholder groups per period (e.g. monthly, quarterly etc.).			
QI 2	The percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.			
QI 3	Perception-based assessment of conflict mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).			
QI 4				
QI 5				
	KPI 6: Uncertainty and risk mitigation			
QI 1	Perception-based assessment of uncertainty and risk mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).			
QI 2	Ratio of unplanned risk occurrences to planned potential risk events related to external stakeholder groups.			
QI 3	Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making.			
QI 4				
QI 5				

Optional: Please indicate below if you want summary of the findings.

☐ Yes ☐ No

* Thanks for partaking in the survey*

APPENDIX VII

DELPHI SURVEY QUESTIONNNAIRE: ROUND FIVE

Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

DELPHI SURVEY: ROUND FIVE (5)

A Survey of Establishing the Quantitative Indicators (QIs) of the Shortlisted KPIs to Assess External Stakeholder Management Performance Level at the Construction Project Planning Stage

Guidance on form completion

Thank you for contributing to this study through Delphi survey responses. Kindly make further contribution by completing the questionnaire and returning to the researcher within **TWO WEEKS**. The outcomes of the fourth round of survey are indicated in the table. The mean scores of the levels of "importance", "measurability" and "obtainability" of the QIs are shown in the **annotated columns** 1, 4, and 7 correspondingly. Your scores in the Round 4 are also correspondingly shown in the **annotated columns** 2, 5, and 8 correspondingly. Given the feedback information, **please input your re-examined scores in the annotated columns 3, 6, and 9** by using the five-point Likert scale indicated below:

For rating the Importance Level: **1 = "Very unimportant", 2 = "Unimportant", 3 = "Neutral", 4 = "Important", and 5 = "Very important"**.

For rating the Measurability Level, **1 = "Very difficult to measure", 2 = "Difficult to measure", 3 = "Neutral", 4 = "Easy to measure", and 5 = "Very easy to measure".**

For rating the Obtainability Level, **1 = "Very difficult to obtain", 2 = "Difficult to obtain", 3 = "Neutral", 4 = "Easy to obtain", and 5 = "Very easy to obtain".**

Practitioner's name: _____ Organisation: _____

Contact: _____ Email: _____

No.	Quantitative Indicators (QIs) for Assessing KPIs	Importance			Measurability			Obtainability		
		1	2	3	4	5	6	7	8	9
		Overall mean scores (4th Round)	Your scores (4th Round)	Your scores (5th Round)	Overall mean scores (4th Round)	Your scores (4th Round)	Your scores (5th Round)	Mean scores (4th Round)	Your scores (4th Round)	Your scores (5th Round)
	KPI 1: Communication effectiveness									
QI 1	Perception-based assessment of communication effectiveness by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.55			3.73			4.05		
QI 2	Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.	4.23			4.45			4.64		
QI 3	Percentage of timely feedback on provided/received information and enquiries to/from external stakeholder groups (i.e. meeting agreed schedule e.g. 2 weeks).	4.14			3.91			3.55		
	KPI 2: Stakeholder support of project									
QI 1	Percentage of specific practice suggestions made by external stakeholder groups that have been adopted in whole or part.	4.27			2.95			2.95		

QI 2	Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.14			3.95			3.91		
QI 3	Extent of project delay due to external stakeholder protest/controversy (percentage of projected planning stage time).	3.82			3.23			3.14		
QI 4	Percentage of representatives of identified external stakeholder groups who are in support of project purpose and objectives.	4.05			3.32			3.91		
	KPI 3: Management monitoring and response									
QI 1	Average time taken to address the requirements of external stakeholders (in terms of weeks).	4.18			3.68			3.32		
QI 2	Percentage of external stakeholder group requirements that have been considered or fulfilled in project.	4.18			4.05			3.86		
QI 3	Perception-based assessment of management monitoring and response by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.68			3.68			2.95		
QI 4	Frequency of monitoring and evaluating external stakeholder requirements fulfilment in project progress [e.g. through meetings, opinion polls etc.] (average in terms of weeks).	3.82			3.68			4.00		
	KPI 4: Smooth project facilitation									
QI 1	Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder).	4.32			3.95			4.09		
QI 2	Percentage of decisions readdressed due to lack of collaboration with the external stakeholders.	4.05			3.59			3.64		
QI 3	Perception-based assessment of efficiency of project facilitation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.77			3.41			3.05		
	KPI 5: Conflict mitigation									
QI 1	Average number of disputes and disagreements occurrence related to external stakeholder groups per period (e.g. monthly, quarterly etc.).	4.32			4.00			4.14		
QI 2	The percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	4.18			4.00			3.91		
QI 3	Perception-based assessment of conflict mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	3.77			3.50			4.14		
	KPI 6: Uncertainty and risk mitigation									
QI 1	Perception-based assessment of uncertainty and risk mitigation by key stakeholders using Likert scale (e.g. scoring from very poor to very good).	4.14			3.68			3.82		
QI 2	Ratio of unplanned risk occurrences to planned potential risk events related to external stakeholder groups.	4.14			3.09			3.36		
QI 3	Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making.	4.27			4.18			4.05		

Optional: Please indicate below if you want summary of the findings.

☐ Yes ☐ No

Thanks for partaking in the survey

APPENDIX VIII

DELPHI SURVEY QUESTIONNNAIRE: ROUND SIX

Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

DELPHI SURVEY: ROUND SIX (6)

A Survey Questionnaire for Establishing Quantitative Requirements (QRs) of the KPIs to Assess External Stakeholder Management Performance Level at the Construction Project Planning Stage

Final Outcomes of Previous Delphi Survey Rounds for the Establishment of Performance Index and Quantitative Indicators (QIs)

Great thanks for partaking in the previous surveys of the captioned study. The Delphi survey results up till now are shown in the Table below.

The Shortlisted KPIs (weightings)	The Best QIs for the Respective Shortlisted KPIs	Overall Mean Scores of the best QIs
KPI 1: Communication effectiveness (0.1879)	Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups	4.41
KPI 2: Stakeholder support of project (0.1741)	Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (e.g. scoring from very poor to very good)	4.37
KPI 3: Management monitoring and response (0.1695)	Percentage of external stakeholder group requirements that have been considered or fulfilled in project	4.14
KPI 4: Smooth project facilitation (0.1627)	Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder)	4.00
KPI 5: Conflict mitigation (0.1569)	The percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	4.33
KPI 6: Uncertainty and risk mitigation (0.1489)	Percentage of identified external stakeholder groups that are averagely represented in project meetings/decision making	4.37
Total weightings = 1.000		

Quantitative Requirements (QRs) for the KPIs to Assess External Stakeholder Management Performance Level at the Construction Project Planning stage in Ghana

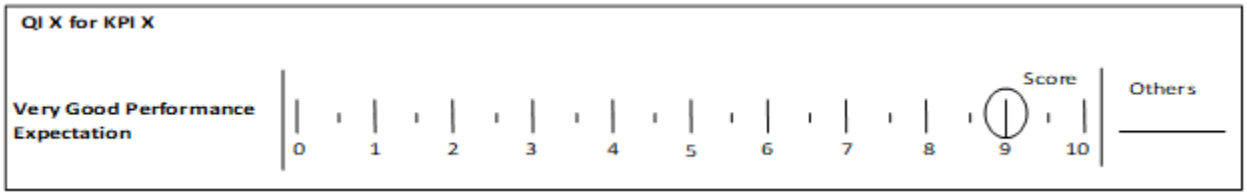
Because stakeholder satisfaction is subjectively judged by different people, its measurement is also very fuzzy in nature and interpreted inconsistently. The selected QIs may be fuzzy in nature and therefore require the subjective value judgement of the assessors. A better option is to clearly define Quantitative Requirements/Ranges (QRs) to form the basis for the assessors' evaluation. In order to define FQRs for the most important QIs of the KPIs identified through the previous rounds of the Delphi survey, this survey questionnaire seeks your view on the performance assessment system for external stakeholder management in construction projects. Your further contribution at this stage will be of great importance in **developing a more objective evaluation model for external stakeholder management performance**. In merging these results with the outcomes of the other objectives for this study, a framework could be developed for best practice and performance evaluation of external stakeholder management in construction projects. Please return completed questionnaire within **TWO WEEKS** to the researcher.

The questionnaire is designed very simple to take about **15 minutes** of your valuable time. Your kind assistance by contributing towards this research study is greatly appreciated. At this stage, you are please required to indicate your views from the assumed standpoint of an **ASSESSOR** in evaluating external stakeholder management performance against the performance demand levels described below. Please indicate your answer by **putting a circle around the value in the scale that matches your expectation**. In case your expected performance level cannot be directly found on the scale, please **enter your expected figure in the last column to the right** as indicated in the examples.

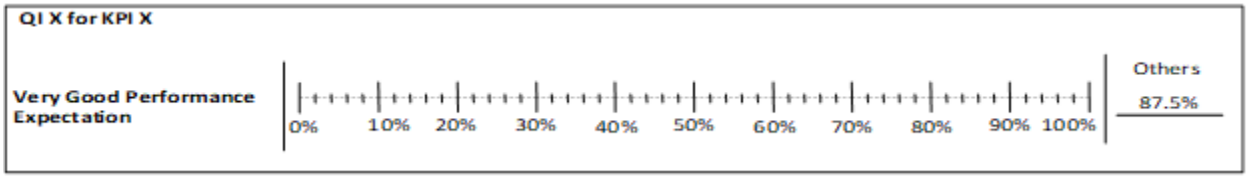
Performance Expectation	Meaning
Level A	"*Very Poor Performance*" Expectation
Level B	"*Poor Performance*" Expectation
Level C	"*Average Performance*" Expectation
Level D	"*Good Performance*" Expectation
Level E	"*Very Good Performance*" Expectation

Please see the examples below

In the example 1, the most vital QI X for the KPI X received a rating of 9 on a 10-point scale with regards to the very good performance expectation of a practitioner.



The example two below indicates the situation where your option (12.5%) cannot be directly found on the scale.

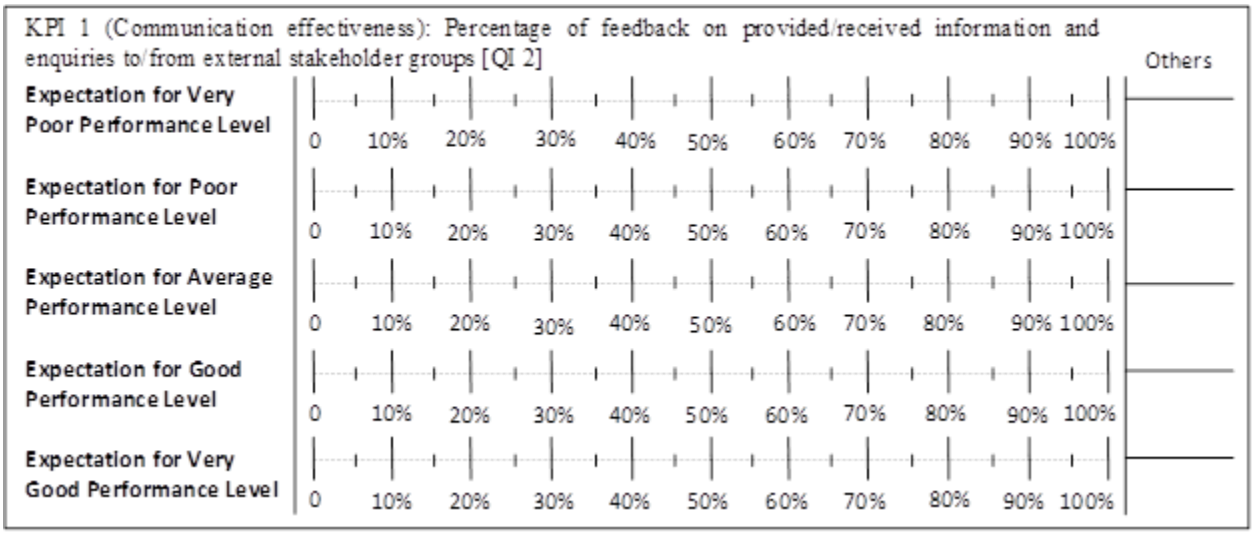


Practitioner's name: _____ Organisation: _____

Contact: _____ Email: _____

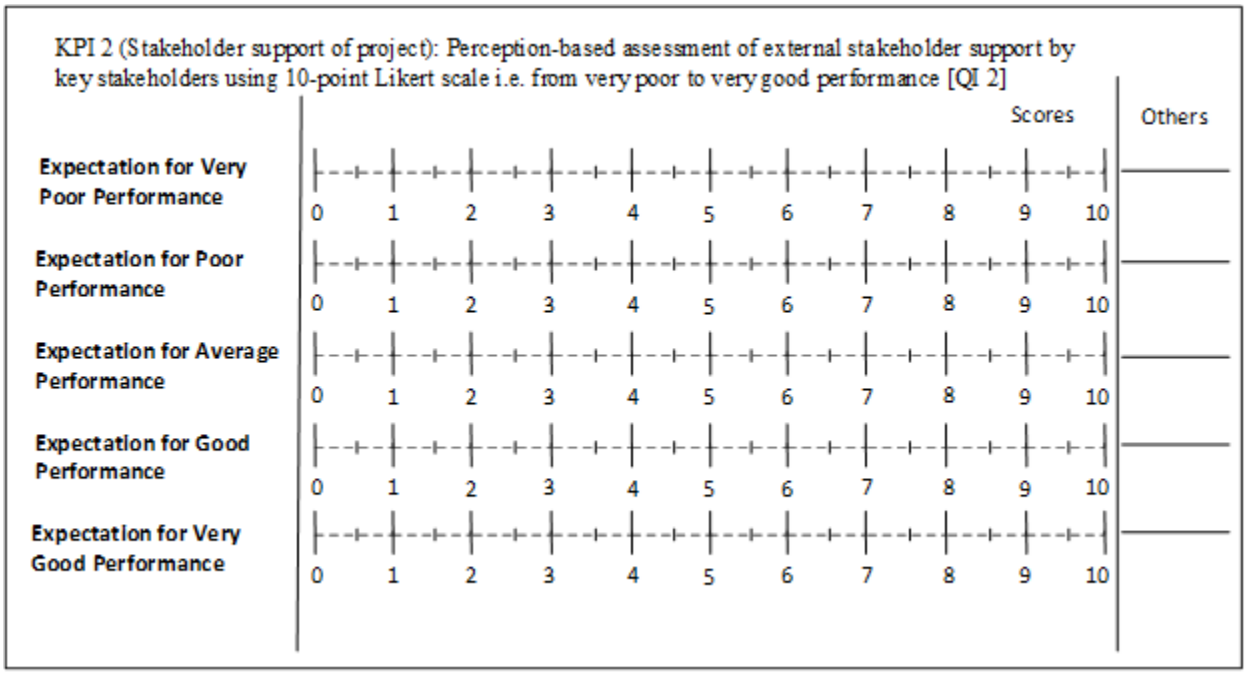
1. KPI 1 COMMUNICATION EFFECTIVENESS

In assessing external stakeholder management performance in terms of "*communication effectiveness"*, please input your expected "*percentage"* of the QI defined below against the 5 levels of performance.



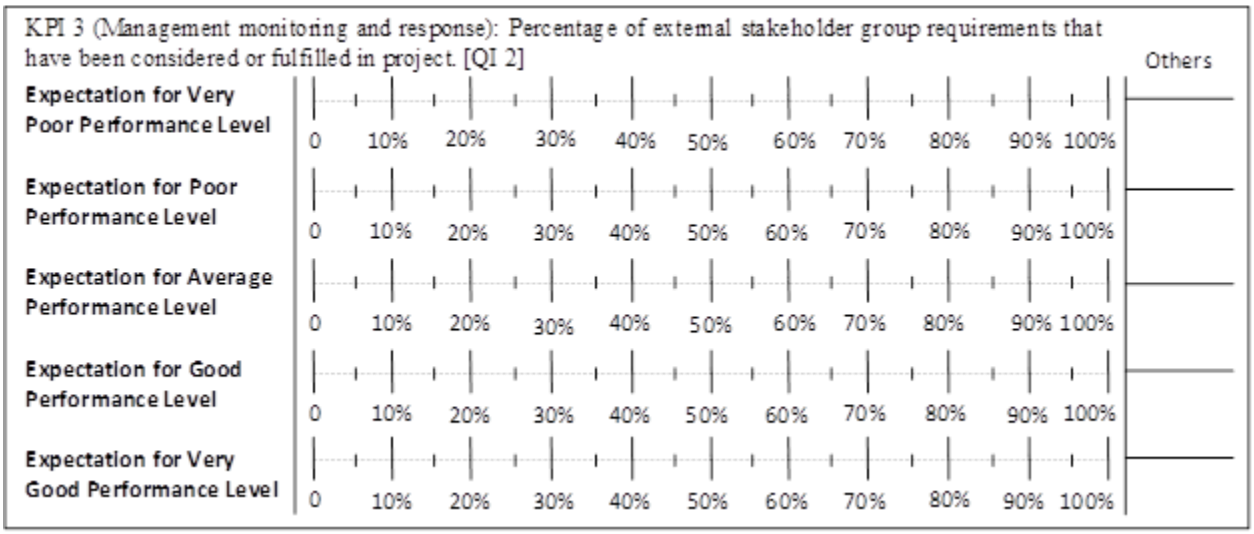
2. KPI 2 STAKEHOLDER SUPPORT OF PROJECT

In assessing external stakeholder management performance in terms of "*stakeholder support of project"*, please input your expected "*score"* of the QI defined below against the 5 levels of performance.



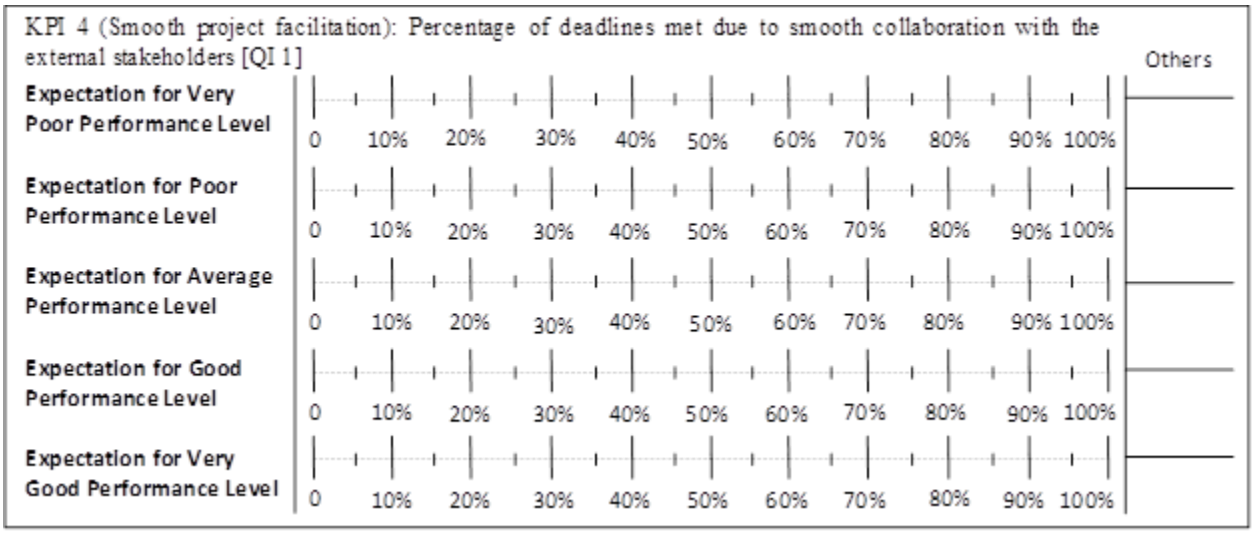
3. KPI 3 MANAGEMENT MONITORING AND RESPONSE

In assessing external stakeholder management performance in terms of "*management monitoring and response"*, please input your expected "*percentage"* of the QI defined below against the 5 levels of performance.



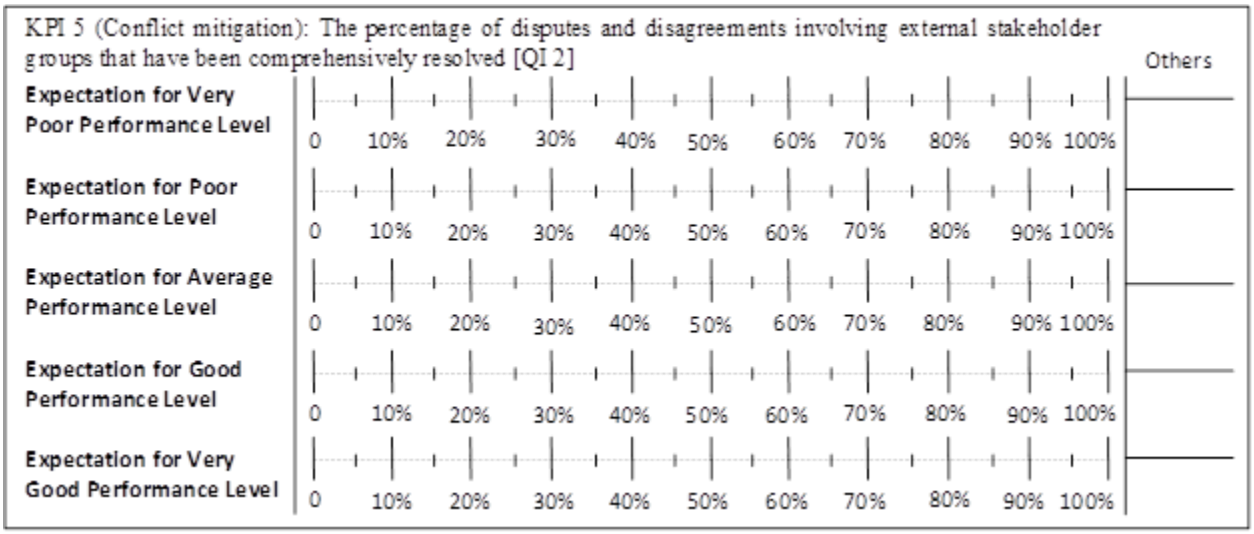
4. KPI 4 SMOOTH PROJECT FACILITATION

In assessing external stakeholder management performance in terms of "s*mooth project facilitation"*, please input your expected "*percentage"* of the QI defined below against the 5 levels of performance.



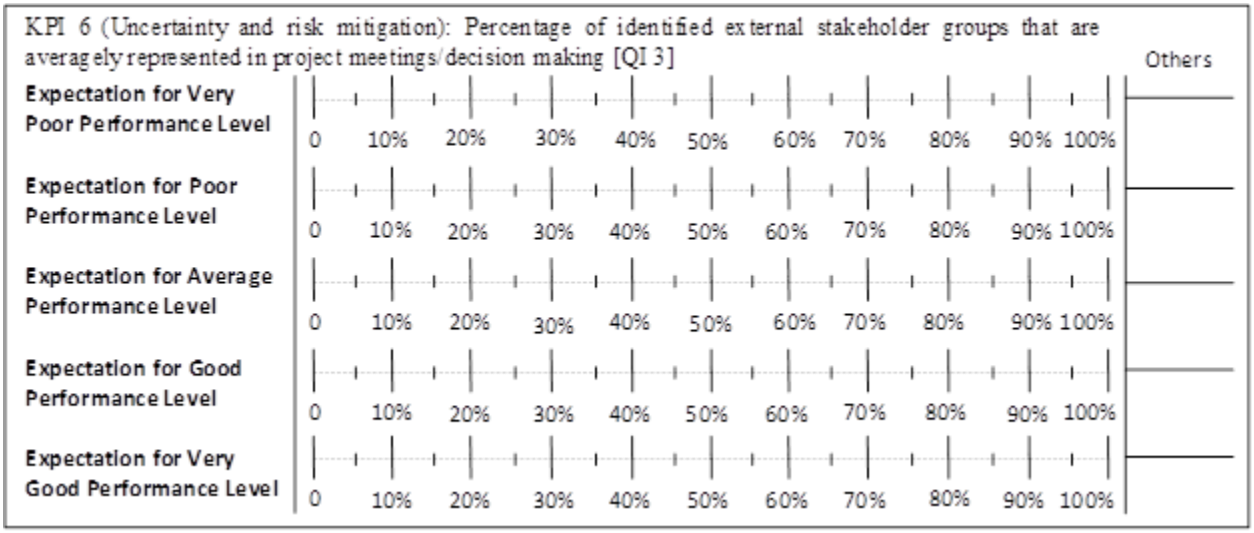
5. KPI 5 CONFLICT MITIGATION

In assessing external stakeholder management performance in terms of "*conflict mitigation"*, please input your expected "*percentage"* of the QI defined below against the 5 levels of performance.



6. KPI 6 UNCERTAINTY AND RISK MITIGATION

In assessing external stakeholder management performance in terms of "*uncertainty and risk mitigation"*, please input your expected "*percentage"* of the QI defined below against the 5 levels of performance.



Optional: Please indicate below if you want summary of the findings.

☐ Yes ☐ No

Thanks for partaking in the survey

APPENDIX IX

SURVEY QUESTIONNNAIRE: CASE STUDY

Research Topic: External Stakeholder Management at the Construction Project Planning Stage in Ghana

Please, I am Goodenough Dennis Oppong. I am presently undertaking the above captioned PhD research in the Department of Building and Real Estate of the Hong Kong Polytechnic University. This questionnaire is designed to test an assessment index developed for external stakeholder management performance on actual project. This is to aid the evaluation of mutual external stakeholder satisfaction in construction projects. Upon conducting six rounds of Delphi survey on construction practitioners in Ghana, the following index has been developed to assess external stakeholder management performance index i.e. mutual satisfaction of external stakeholders:

$$\begin{aligned}\boldsymbol{Index} = {} & (0.1879 \times \text{Communication effectiveness}) \\ & + (0.1741 \times \text{Stakeholder support of project}) \\ & + (0.1695 \times \text{Management monitoring and response}) \\ & + (0.1627 \times \text{Smooth project facilitation}) \ + (0.1569 \times \text{Conflict mitigation}) \\ & + (0.1489 \times \text{Uncertainty and risk mitigation})\end{aligned}$$

Description of the Key Performance Indicators

Performance Indicators	Description of the Six Performance Indicators
KPI 1: Communication effectiveness	The frequency or extent to which quality project information is made available and exchanged among the multi-stakeholders
KPI 2: Stakeholder support of project	Stakeholders accepting project purpose and readily providing required support
KPI 3: Management monitoring and response	Effective monitoring and prompt (timely) response to stakeholders' concerns in project development
KPI 5: Smooth project facilitation	Project processes running smoothly where stakeholders are properly engaged and managed, thus, limited disruption of project progress by stakeholders
KPI 6: Conflict mitigation	Minimization of destructive conflicts of interests among stakeholders through effective consensus building
KPI 4: Uncertainty and risk mitigation	Minimization of uncertainty and potential risks by giving necessary attention to relevant stakeholders particularly at the construction project planning stage

Please see below (Note 1) the definitions of the planning stage and the three groups of external stakeholders considered in this study.

NOTE 1
In this study, ***the planning stage includes the idea conception and all other activities prior to actual construction***.

The ***external stakeholders*** are those who usually can affect or are affected by the project even though they do not form part of the main project coalition or provide funds (Calvert 1995; Winch and Bonke, 2002).

In this research, the external stakeholders are discussed under three main groups:

(1) ***The Governmental Authorities*** (e.g. national, regional and local government authorities, and regulatory agencies);

(2) ***The General public*** (e.g. trade and industry, environmentalists, intervenors, end users, mass media, and pressure groups); and

(3) ***Affected Local Communities*** (e.g. schools, hospitals, neighbours, traditional authorities/chieftaincy institutions, local religious groups/deities, and local trade and industry).

Kindly fill and return the questionnaire to the researcher with **TWO WEEKS**.

CASE DATA

Your anonymity with regards to the provided information shall be honoured. The information is only intended for academic purposes. Hence, the name of the project and other sensitive information will be concealed. You are kindly requested to fill this questionnaire with reference to the case study project.

Personal Information

Professional's background: _____

Your role in the project planning: _____

Your position in the organisation: _____

Project Information

Project Title: _____

Projected value (Sum) of project: _____

Client of Project (public or private): _____

Nature of Project (Building or Civil): _____

Length of Project planning stage: _____

Brief scope of Project:

Please list the external stakeholders you identified in the project following the classification provided.

Please I will be thankful if you can provide the following information about the external stakeholder groups you managed at the planning stage of the described project.

NB: The quantifiable measurement approaches were developed by professionals to help evaluate the key performance indicators (KPIs) as indicated below.

Key Performance Indicators	**Quantitative Indicator**	**Percentage/ Score**
KPI 1: Communication effectiveness	Measure: Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.	
KPI 2: Stakeholder support of project	Measure: Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (10-point scale).	
KPI 3: Management monitoring and response	Measure: Percentage of external stakeholder group requirements that have been considered or fulfilled in project.	
KPI 4: Smooth project facilitation	Measure: Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder).	
KPI 5: Conflict mitigation	Measure: The percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	
10. KPI 6: Uncertainty and risk mitigation	Measure: Percentage of identified external stakeholder groups that are averagely represented in project meetings/ decision making.	

Thanks for your participation.

APPENDIX X

SEMI-STRUCTURED INTERVIEW GUIDE

Doctor of Philosophy (PhD): Research on External Stakeholder Management at the Construction Project Planning Stage in Ghana

Interview Guide

These interview questions form part of a PhD research project fully sponsored by the Hong Kong Polytechnic University and aimed at "*developing a framework that will serve as an industrial guide for external stakeholder management practice and performance evaluation at the planning stage of construction projects*". The importance and need for construction stakeholder management has been acknowledged globally. However, construction stakeholder management has been ineffective and attained a poor record in the past decades, especially regarding external stakeholders. This research therefore investigates important issues that will culminate in improving external stakeholder management in construction projects in Ghana.

NOTE

The ***external stakeholders*** are those who usually can affect or are affected by the project even though they do not form part of the main project coalition or provide funds (Calvert 1995; Winch and Bonke, 2002).

In this research, the external stakeholders are discussed under three main groups:

(1) ***The Governmental Authorities*** (e.g. national, regional and local government authorities, and regulatory agencies);

(2) ***The General public*** (e.g. trade and industry, environmentalists, intervenors, end users, mass media, and pressure groups); and

(3) ***Affected Local Communities*** (e.g. schools, hospitals, neighbours, traditional authorities/chieftaincy institutions, local religious groups/deities, and local trade and industry).

Please do answer these questions with regards to the planning stage of construction projects. The planning stage in this study includes the idea conception and all other activities prior to actual construction.

Interviewee:_____ Time and Date:_____

Position: _____ Venue:_____

Contact: _____ Years of experience:_____

Interviewer: _____ Record taken by:_____

To facilitate the interview process and save time, the questions which will be used for the interaction are stated below. Please feel free to share any other of your knowledge/experience on external stakeholder management which is excluded in the list below.

Questions on present practices in (external) stakeholder management

1. In your experience, which among the external stakeholder groups is the most challenging to manage? What are the reasons for selecting the external stakeholder group?
2. How do you identify the external stakeholders and their concerns/expectations at the planning stage of project?
3. How do you engage with the external stakeholders at the planning stage of construction project?
4. How do you prioritize the concerns/expectations of the external stakeholders in project development?
5. What are your motives/reasons/objectives for managing external stakeholders?
6. What practical measures do you put in place to manage the external stakeholder and their concerns/expectations properly in project?
7. How do you consider and deal with the dynamics (e.g. changing interests, relationships, position, power etc.) in the stakeholder environment?
8. How do you know if you are managing the related external stakeholders well in projects?

Questions on the expectations of external stakeholders

9. What are the main concerns/expectations of each external stakeholder group in construction project development?

Questions on obstacles of external stakeholder management

10. What are the major obstacles faced in managing external stakeholder groups, particularly at the construction project planning stage in Ghana?

Questions on critical success factors

11. What are the main factors contributing to external stakeholder management success at the construction project planning stage in Ghana?

Other general external stakeholder management practices in the industry

12. What is your general observation of external stakeholder management practice at the construction project planning stage in Ghana?

Thank you very much for your contribution. For further enquiries please contact:

Goodenough Dennis Oppong, PhD Research Student
Ir. Prof. Albert P.C. Chan, Head of Building and Real Estate Department, The Hong Kong Polytechnic University
Emails:_____ Contact:_____

APPENDIX XI

SURVEY QUESTIONNNAIRE: VALIDATION OF STUDY

Validation Questionnaire: Doctor of Philosophy (PhD) Research into External Stakeholder Management at the Construction Project Planning Stage in Ghana

Purpose of Survey

The purpose of the survey is to validate how comprehensive, applicable and practical the developed framework for external stakeholder management is in the Ghana Construction Industry (GCI).

Selection Criteria of Expert (Respondent)

This study requires your experiential knowledge of external stakeholder management in the GCI. Please you are considered qualified to validate the framework upon meeting the following criteria: (1) "knowledge and in-depth understanding of the stakeholder management concept", (2) "current/recent practical experience in external stakeholder management", (3) "ten [10] years or more construction industry experience in managing/relating/engaging with external stakeholders", and (4) "non-involvement in the development of the practical framework and relevant tools in the study".

Background of the Framework

The framework developed has two principal parts: (1) the best practices required to manage the external stakeholder groups and their requirements at the project planning stage; and (2) the approach for evaluating, benchmarking, monitoring and upgrading the level of external stakeholder management performance (i.e. mutual stakeholder satisfaction) at project planning stage. The study's aim is "***to develop a framework that will serve as an industrial guide for external stakeholder management practice and performance evaluation at the planning stage of construction projects***". The aim has been accomplished through comprehensive review of literature, questionnaire surveys and interviews in Ghana. The findings from the various objectives have been consolidated into the practice framework.

The study is based on the management-for-stakeholders theory that ensures that external stakeholder groups participate in decision-making and project benefits accrue to them as well. The managers make conscious effort in engaging stakeholders fairly in order to deliver projects in an ethical and sustainable manner, and thus, creates a win-win situation for the project organisation and external stakeholder groups. Hence, it assumes that all external stakeholders identified in projects are relevant and should be managed properly in project development.

NOTE

The ***external stakeholders*** are those who usually can affect or are affected by the project even though they do not form part of the main project coalition or provide funds (Calvert 1995; Winch and Bonke, 2002).

In this research, the external stakeholders are discussed under three main groups:

(1) ***The Governmental Authorities*** (e.g. national, regional and local government authorities, and regulatory agencies);

(2) ***The General public*** (e.g. trade and industry, environmentalists, intervenors, end users, mass media, and pressure groups); and

(3) ***Affected Local Communities*** (e.g. schools, hospitals, neighbours, traditional authorities/chieftaincy institutions, local religious groups/deities, and local trade and industry).

Important Instructions

1) Please review the framework at the **Section C (attached)** and details in the **Table** before rating your agreement level with each of the seven validation questions using the five-point Likert scale.

2) Please do also provide feedback comments in the spaces provided under the framework.
3) Kindly complete the questionnaire within **10 DAYS** from today and return to researcher through email or the WhatsApp contact (snapshot).

Outline of Questionnaire

Section A: Requires the input of your profile information. **Section B:** Presents details of some of the best practices indicated in the framework with **'*'**. **Section C:** Presents the final framework developed for external stakeholder management practice and performance assessment. **Section D:** Requires the input of your agreement level with each validation question using the 5-point Likert scale. **Section E:** Requires you to add comments to help improve and finalise the framework. Many thanks for your kind assistance.

Goodenough Dennis Oppong, PhD Research Student.
Ir. Prof. Albert P.C. Chan, Supervisor and Head, Building and Real Estate Department, The Hong Kong Polytechnic University.
Emails:
Contact (WhatsApp):

Section A – Respondent's Background Information

1. Nature of projects you usually participate in:
   ☐ Building work ☐ Civil work ☐ Others, please specify: _____
2. Sector of the client of projects you are usually engaged in:
   ☐ Public ☐ Private ☐ Others, please specify: _____
3. Please state your position in the organisation: _____
4. Nature of your organisation:
   ☐ Client ☐ Consultant ☐ Contractor

Section B – Details of Best Practices in the Framework for Construction Projects

Due to the limitation of detailing the figure, the following measures are outlined for external stakeholder management in developing countries. The related activities in the framework are indicated with **"*"**

Process	Practical Considerations/Methods/Suggestions	Remarks
1. Setting stakeholder management objectives	• Improve the lives of people • Avoid or minimize stakeholder disturbances • Gain stakeholder buy-in and cooperation • Understand how stakeholders receive the project • Understand stakeholder roles in project • Communicate well the benefits and burdens of project • Clarify and document concerns of stakeholders • Eliminate or minimize risks associated with stakeholders • Guarantee the project to serve its purpose fully • Ensure that the stakeholders own project • Promote good neighbourliness with the project	The objectives are basically the motives or reasons for engaging and managing stakeholders in project. Setting the right objectives would help practitioners determine the right stakeholder management approach to use so that the project mission could be achieve and the stakeholders satisfied thereby. For instance, if the objective is to avoid or minimize stakeholder disturbances with regards to the project, then practitioners must adopt good consensus building mechanisms to align the external stakeholders to the project objectives as much as possible.
2. Identifying and Engaging stakeholders	• Meetings • Correspondences • Informal interactions • Durbars • Newspaper publications • Radio broadcasts	Practitioners must consider context such as size and intensity of engagement in adopting applicable methods. The intensity of engagement includes information, consultation, involvement, collaboration and empowerment. For instance, for small groups such as opinion leaders, traditional leaders and

	• Telephone conversations • Television broadcasts • Public forums • Surveys • Project information leaflets, brochures etc.	government establishments, the round table meeting might be more effective engagement and identification method. For larger groups like the public, durbars and open forum may be effective. Through these methods, new stakeholders and requirements will be realised in project.
3. Analysing and prioritizing the requirements (expectations/ concerns/ interests/needs)	• Recurrence of requirements among external stakeholders • Likelihood of solutions serving a purpose to more people • Legitimacy of the requirements • Power of stakeholders • Urgency of the requirements • Extent of potential impact on stakeholders • Conformity of requirements to project scope • Availability of required resources	Practitioners should deliberate on the list whiles considering the needs of the external stakeholders in project. For instance, the requirements that are common among the external stakeholders should be ahead of those that are relatively less common. Also, the concerns that are more urgent (in terms of time or impact) should be put ahead of those that are less urgent in project.
4. Social responsibilities	• Economic • Social • Ethical • Legal • Environmental • Religious • Cultural • Technical • Information	The social responsibilities cover the expectations and concerns of the external stakeholders in project.
5. Analysing stakeholder attributes	• Legitimacy • Urgency • Power • Proximity	The combination of the attributes determines the influence level of the stakeholders on project. For instance, a stakeholder that has legitimacy in project but lacks adequate power may have less influence on project.
6. Analysing stakeholder behaviours	• Actual behaviour • Cooperative potential • Competitive threat	The behaviour posed by the stakeholders determine whether they are in support and ready to receive project, or they are against project development.
7. Strategies to manage stakeholders	• Holding • Defence • Compromise • Concession	Holding: Fight stakeholder issues, or entirely pull out and ignore the stakeholders. Defence: Fulfil only the minimum stipulated requirement while addressing stakeholder issues. Compromise: Negotiate with the relevant stakeholders and try to reach compromising solutions. Concession: Implement stakeholders' requirements or yield to stakeholders' demands.
Assessment of External Stakeholder Management Performance at the Construction Project Planning Stage		
An index has been derived using the six shortlisted key performance indicators (KPIs) that are found to be the best measures of external stakeholder management (SM) performance at project planning stage in Ghana. The overall index represents the level to which external stakeholders and their requirements are effectively management in project. It has been revealed that the higher the effectiveness of the external SM activities/processes, the higher the mutual satisfaction that accrues to the external stakeholders in project (Oppong et al., 2017). Based on earlier survey, coefficients have been assigned to each KPI. The coefficients indicate the extent to which each KPI contributes to the overall performance level of external stakeholder management. By using the unique "measure" of each KPI [in the rows below], the composite index would be assessed by the equation below: $$\boldsymbol{Index} = (0.1879 \times \text{Communication effectiveness}) + (0.1741 \times \text{Stakeholder support of project}) + (0.1695 \times \text{Management monitoring and response}) + (0.1627 \times \text{Smooth project facilitation}) + (0.1569 \times \text{Conflict mitigation}) + (0.1489 \times \text{Uncertainty and risk mitigation})$$ Note that higher index value implies more effective external SM process and higher corresponding mutual satisfaction of external stakeholders, and vice versa. The framework also shows five performance levels ("very poor", "poor", "average", "good" and "very good") as a rule of thumb for practitioners to know if they are managing the external stakeholders well at the project planning stage.		
8. KPI 1: Communication effectiveness	• Measure: Percentage of feedback on provided/received information and enquiries to/from external stakeholder groups.	Definition: The frequency or extent to which quality project information is made available and exchanged among the multi-stakeholders.

9. KPI 2: Stakeholder support of project	• Measure: Perception-based assessment of external stakeholder support by key stakeholders using Likert scale (10-point scale).	Definition: Stakeholders accepting project purpose and readily providing required support.
11. KPI 3: Management monitoring and response	• Measure: Percentage of external stakeholder group requirements that have been considered or fulfilled in project.	Definition: Effective monitoring and prompt (timely) response to stakeholders' concerns in project development.
12. KPI 4: Smooth project facilitation	• Measure: Percentage of deadlines met due to collaboration with the external stakeholders (deadlines must be related to external stakeholder).	Definition: Project processes running smoothly where stakeholders are properly engaged and managed, thus, limited disruption of project progress by stakeholders.
13. KPI 5: Conflict mitigation	• Measure: The percentage of disputes and disagreements involving external stakeholder groups that have been comprehensively resolved.	Definition: Minimization of destructive conflicts of interests among stakeholders through effective consensus building.
14. KPI 6: Uncertainty and risk mitigation	• Measure: Percentage of identified external stakeholder groups that are averagely represented in project meetings/ decision making.	Definition: Minimization of uncertainty and potential risks by giving necessary attention to relevant stakeholders particularly at the construction project planning stage.

Section C – External Stakeholder Management Framework for Construction Projects

PLEASE INSERT THE ATTACHED FIGURE (FRAMEWORK) ABOUT HERE

Section D – Validation Questions

INSTRUCTION: Please rate the following validation questions relating to the developed framework for the Ghana Construction Industry (GCI) based on the five-point Likert scale: **1= "strongly disagree", 2= "disagree", 3= "neutral", 4= "agree", and 5= "strongly agree".**

S/N	Validation Question	1	2	3	4	5
1	The framework is made up of the essential elements for managing external stakeholders in the GCI.	☐	☐	☐	☐	☐
2	The assessment system comprises appropriate KPIs to measure external stakeholder management performance (i.e. mutual satisfaction) level at project planning stage.	☐	☐	☐	☐	☐
3	The assessment system is objective and reliable for comparing external stakeholder management performance (i.e. mutual satisfaction) levels across different project.	☐	☐	☐	☐	☐
4	The elements in the framework are appropriately categorized.	☐	☐	☐	☐	☐
5	The structure and interrelationships of all elements in framework are organised appropriately.	☐	☐	☐	☐	☐
6	The overall framework is suitable for the practise of external stakeholder management and related performance assessment.	☐	☐	☐	☐	☐
7	The practice framework will serve as a systematic reference for future work	☐	☐	☐	☐	☐

Section E – Follow-up Comments and Reservations

Please indicate your comments and reservations in the space provided below to help improve and finalise the framework.

Choose an item.

Choose an item.

Choose an item.

Many thanks for your time.