Collaboration in the Ghanaian Construction Industry: Perceived Barriers and Benefits

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ABSTRACT

The construction industry involves high risk-taking activities that result in cost overruns, low productivity, litigation, ineffective communication and construction delays. The introduction of collaboration into the construction industry has been frequently used as an innovative approach towards the achievement of quality in construction and as a remedy for the pitfalls of the conventional approaches of procurement in the construction industry. This study was aimed at assessing the perception of construction professionals on the potential barriers and benefits of collaboration in the construction industry. A questionnaire survey was used to solicit the views of the respondents on the issues under study. A total number of sixty questionnaires were sent to the respondents under investigation. Data from the survey was analyzed using Relative Importance Indices. The findings from the study revealed that fear of micromanagement, lack of common goals and past negative experience with collaboration were the main barriers to collaboration in the Ghanaian construction industry. Also, the main benefits associated with collaboration in the Ghanaian construction industry were identified to include total cost perspective in collaboration, technical expertise by partners and availability of resources in collaborations. The study recommends that collaboration should be widely accepted and practiced, and careful consideration should be given to professional expertise with sufficient skills during the selection of partners and workshops to advocate the use of collaboration in the construction industry.

Keywords: Barriers, benefits, collaboration, construction, Ghana.

INTRODUCTION

The construction industry has undergone remarkable transformation during the past decade in the form of increased competition; increased costs of construction; rapidly changing technology and construction methods; and increased risk in construction contracts (Stipanowich & Matthews, 1997). Sonnenbery (1992) explained that the changes represent crisis in the construction industry and companies have begun to explore alternative management approaches to maintain superiority. Contractors in project implementation are faced with challenges such as low profitability, cost overruns, construction delays and an atmosphere of win-lose. This environment makes it difficult for contractors to remain in business. According to Anvuur *et al.* (2006) it is prudent to introduce mechanisms which enable contractors to jointly execute projects successfully with less difficulties. Anvuur *et al.* (2006) further affirmed that collaboration is the most prudent solution to the above problem.

According to Latham (1994), collaborative working and partnering can be relevant in minimizing low performance of construction and the lack of client satisfaction. Stiles (1995) further highlighted that increase in globalization, competitiveness, risk and uncertainty within the construction industry have given rise to the need for contractors to collaborate to remain in business. Furthermore, companies with the quest to enter new markets or planning long-run

studies and growth programs have recognized that collaboration presents the opportunity to distribute the risks of construction investments. Construction companies can survive the industry by recognizing ways that would lead to profits and performance improvement; for many construction firms this can be attained by utilizing collaborative processes (Moore *et al.*, 1992). The persistence of these circumstances has prompted most developed and developing countries like Ghana to adopt collaboration as an effective management method that propagates innovative solutions and improved resolutions to conflicts that arise in the construction industry. According to Wood and Ellis (2005), collaboration is the most important development to date as a means of refining construction project performance, and it delivers a fundamental swing from the traditional combative relationships in construction.

Collaboration is a relationship between two or more contractors designed with the direct intention of boosting performance in project delivery (Scott, 2001). Cowan (1991) defined collaboration as a cooperative method to contract management with the aim of reducing litigation, costs and stress within a construction contract. In the same vein collaboration is a commitment to recognize owner-contractor relationships as essential parts of the routine construction operations (Abudayyeh, 1994). Lowe (2012) explained that collaboration provides trust and goodwill, promotes open communication and helps the parties eradicate adversarial relationships and surprises. It enables the various parties to forestall and determine disputes through informal conflict management actions. Though many studies have been conducted in different countries worldwide, not much has been done on collaboration in the Ghanaian construction industry. The extent of knowledge of collaboration among contractors, consultants, clients and other stakeholders is very minimal in the Ghanaian context.

This paper therefore aims at assessing the perceptions of construction professionals on the perceived barriers and benefits of collaboration in the Ghanaian construction industry.

Collaboration in construction

Collaboration is grounded on mutual trust, common goals, commitment, and effective communication (Nystrom, 2005; Chan *et al.*, 2004; Liu & Fellows, 2001). Regarding the competitive nature of the construction industry, Fong and Lung (2007) and Abudayyeh (1994) argued that collaboration aims to resolve difficulties between the participants, transform confrontational relationships into cooperative ones, establish continuous development, provide on-time and within-budget delivery, enhance communication, increase the quality of the product and provide better customer satisfaction. However, evidence in support of collaboration is not always conclusive. Several definitions of collaboration have been derived from previous studies. According to Li *et al.* (2000) some scholars use collaboration interchangeably with partnering. However, the most denoted definition was developed by the Construction Industry Institute (CII). The CII (1991) identifies collaboration as a long-term commitment between several organizations for the purposes of achieving specific business objectives by exploiting the efficiency of each participant resources. This necessitates varying traditional relationships to a shared culture without regard to organizational restrictions. CII (1991) further indicated that the relationship is grounded on trust, dedication to common goals and an understanding of each other's individual expectations and values.

Earlier researches on client, consultant and contractor relationships show that collaboration has a positive impact on project performance, not only regarding time, cost and quality; but also, improvement in profit margins and reduced litigations. Swan and Khalfan (2007) highlighted that collaboration is optically recognized by most people in the public sector as a way of deviating from the confrontational relationships in construction projects and approach, providing a more collaborative method of managing construction projects. The drivers for

public bodies in most developed and developing countries to adopt collaboration has been because these public bodies have been authorized to do so by articles, reports, panels and national strategies. Abdul-Nifa and Ahmed (2010) highlighted that collaboration is a set of behaviour among firms with shared resources and responsibilities to achieve mutual objectives and perceived benefits. However, Naoum (2003) also defined collaboration as a concept which provides a framework for the establishment of mutual objectives among the building team with an attempt to reach an agreed dispute resolution procedure as well as encouraging the principle of continuous improvement. Collaboration is regarded as a tool/process for achieving efficiency in organizations (Barlow & Cohen, 1997).

Pillars of collaboration

Collaboration consists of seven pillars which include benchmarking, equity, project process, strategizing, integration, feedback and membership (Bennett & Jayes, 1998). Bennett and Jayes (1998) further threw light on each of the seven pillars as follows: Strategy of collaboration in an organization aspires to plan for a long-term target in the organizational teamwork, reducing project cost and construction time with no defects; benchmarking is the main target to improve the performance of collaboration which uses factors to compare the performance of a company with other companies in the market; equity lends a hand to let the teams of the project focus on making the project successful for everyone involved and this can be maintained by affecting the idea of strategic team and requires preventing disputes over money; project process is also a pillar that increases the strength of the organizational collaboration in the sense that, companies raise up the level of standards and procedures in order to get a higher level of performance; integration refers to companies involved in the collaboration putting together standards, procedures, processes and methods to improve them to achieve successful collaboration; feedback is also an important pillar to control and monitor the improvement of the performance and to determine if it meets the required standard or needs to be developed; and membership also leads to contributing to develop multidisciplinary team to ensure the ultimate experience and to drive the efforts to their extreme (Saeed, 2011).

Stakeholders' perspectives of collaboration

There are three main parties involved in collaboration namely the owner, designer and contractor (Saeed, 2011). Other stakeholders in collaboration are sub-contractors, suppliers, labourers and fabricators. According to Simpson (2001), stakeholders in the construction industry have different perspectives on construction partnering. These perspectives are described to include the following:

Clients' Perspective

Simpson (2001) explained that the client has little to benefit from collaboration. Following a normal contract, the contractor commits to build an agreed structure for an agreed fee in an agreed time frame. If the project is late, penalty clauses are activated. If the project runs over budget, it is somebody else' problem. Moreover, if serious disputes arise, there is always recourse to the courts. However, this is too simplistic a view. Clients have realized that collaboration offer significant benefits, once the groundwork has been undertaken. Deciding to go down the collaboration route does involve considerable commitment from the client, notably in the evaluation of potential team members. Simpson (2001) noted that it is relevant to evaluate possible main contractors to develop a shortlist with a proven track record and a comparable commitment of contractor to collaborate.

Designers' Perspective

The building industry has long suffered from a lack of integration among designers (architect, structural engineer, mechanical engineer etc.). For years, it is known as 'Traditional Design' and it can be understood as a linear process. Traditional design process based on the following features:

- The architect and the client agree on a design concept, consisting of a general scheme, and (usually) the general exterior appearance, in addition to basic materials;
- The structural, mechanical and electrical engineers are then asked to implement the design (Pearl, 2004).

In this situation it is mostly difficult to turn back to the architect and ask for any changes to be made. This linear process causes many problems since architects and engineers do not join effectively their processes.

In recent years, it has become common for professionals to be a part of the 'Integrated Design Process' (IDP). In an IDP, team members mutually define the desired outcomes of the project and work together to set performance goals. In IDP guideline (2003) it is defined with these words that; IDP involves a different approach from the very early stages of design, and can lead to a very different result. In the IDP, the architect is not the only person to make decisions, although he retains his guiding function through his position as the team leader. The architect gains knowledge of technical solutions while the engineers are simultaneously gaining insight into the complexity of the architectural design process (IDP, 2003). All of this can allow designers to reach a very high level of design and project performance. Moreover, IDP offers an opportunity to establish a closer relationship with owners and to understand their needs. For that reason IDP can be defined as a collaborative process to allow the architect and the other designers (structural, mechanical, electirical engineers, etc.) to develop and realize clearly defined and challenging goals and objectives.

Main Contractors' Perspective

The main contractor is at the sharp end and in a competitive tender situation, up-front costs are high with no guarantee of success (Simpson, 2001). If the tender is successful, cost must then be squeezed out at every stage of the project usually by adopting a very hard stance with sub-contractors (Simpson, 2001). A great deal of administration must be invested in site disputes, often involving design detailing or site access disputes that could have been designed out at the planning stage (Simpson, 2001).

Sub-Contractors' Perspective

In many ways, collaboration has most to offer the specialist sub-contractor (Simpson, 2001). In traditional adversarial contracts, it is the sub-contractor who most often feels at the sharp end (Simpson, 2001). As well as the up-front costs of preparing detailed tender documentation, it is not unusual for one major project to present 6 to 12 months' turnover for the sub-contractor (Simpson, 2001). If the project costs are escalating, it is the sub-contractor's margins that get squeezed (Simpson, 2001). One defect action or retained payment can cause the company to fail. This situation is exacerbated by the fact that many specialist sub-contractors are only consulted late when key design decisions which adversely affect their element of the project have already been completed (Simpson, 2001). Simpson (2001) further affirmed that such problems are compounded by pressure from following trades or delays in earlier construction phases which impact negatively on their ability to perform their roles.

Consultants' Perspective

Members of the construction team are likely to experience the least direct impact from collaboration. As much as possible, benefits should stem from early consultation and liaison with both the main contractor and sub-contractors (Simpson, 2001). The greatest benefit for the consultants lie in the early involvement of sub-contractors (Simpson, 2001). Very often in projects, positive inputs from sub-contractors cannot be adopted. This is because irreversible decisions preventing their implementation have already been made (Simpson, 2001). In collaborative projects, it is easier for key packages such as curtain walling to be partnered, thus enabling the suppliers' and sub-contractors' expertise to be integrated into the overall design process at an early stage (Simpson, 2001). This allows the design team to take a strong overview of the concept in the knowledge that the scheme would not hit unforeseen snags during implementation on site (Simpson, 2001).

Suppliers' Perspective

According to Simpson (2001), collaboration seems to have little impact on suppliers' business. However, it has been appreciated of late that collaboration can both improve relationships between the supplier and main contractor or sub-contractor and unlock a vast pool of knowledge and expertise for the design team. Simpson (2001) further indicated that suppliers are also adopting collaborative approaches with their components or service providers and further extending the benefits of collaboration through the whole supply chain.

Benefits of collaboration

Successful collaboration factors are the key areas that are essential for management success. Collaboration can become successful by using relevant management skills and developing a favourable environment (Cheung *et al.,* 2003). It is vital to create a suitable environment in which inter-organizational relationship can flourish. Management skills are important for effective regulation of the relationships. These relationships form the foundation for initiating and facilitating the partnering process. However, some collaboration characteristics can affect the collaboration relationships. Majority of the collaboration characteristics form the favourable environment and establishes interdependence and self-willingness to work for the long-lasting unified relationship. Cheung *et al.* (2003) and Chan *et al.* (2004) indicated that these characteristics include top management support, long term commitment, mutual trust, willingness to share resources and commitment to win-win attitude.

Crespin-Mazet and Ghauri (2006) explained that successful collaboration exists only when there is trust which results in teamwork. The trust can be obtained by dealing with each other in a clear and transparent transaction (Crespin-Mazet & Ghauri, 2006). The extent of trust affects the success of a collaborative relationship. A positive atmosphere based on trust between all parties involved is required to engage in a collaborative relationship. Scott (2001) as cited in Saeed (2011) identified seven inevitable elements of successful collaboration. These seven elements include: 1) commitment, in which parties must fulfill and respect the character of collaboration especially in the management level; 2) listening and respecting other's thoughts, and different views; 3) providing the maximum quality of services to give a good reputation; 4) parties involved in partnership must be open minded and communicate either shared or individual targets; 5) all participants must clear up and clarify their goals and objectives of the project in all respects; 6) successful work cannot be done away from perseverance in a timely basis using open ongoing communication which has to follow a known protocol to all participants; 7) continuous communication, getting the feedback, and

analyzing it (Scott, 2001).

Also, Osborne (2012) highlighted that several principles which include; 1) believing in the collaboration relationship and being prepared to change any old habits which are inconsistent with the collaboration ethos; 2) agreeing to objectives that are mutually beneficial to all parties and that involve truly shared risks / gains; 3) managing behavioral change within the parties' organizations; 4) effective communication (internally within organizations and externally between organizations) in order to form an effective and efficient collaboration team; 5) encouraging innovation and acceptance or rejection of new ideas clearly and openly within reasonable time limits; 6) effective teamwork based on the foundations of mutual goals, respect, openness and honesty, with the support and encouragement of senior management teams should be adopted to achieve successful collaboration.

Barriers to collaboration

In explaining the barriers to collaboration, Anglisger and Jenk (2004) indicated that collaboration and alliances fall well of expectations due to the following causes: shift in a partner's strategic direction, senior management attention wanders; lack of career path and shortage of staff; and clash of corporate cultures. Sonnenbery (1992) on the other hand identified important reasons why collaboration fail as lack of commitment, cultural differences, poor communication, and failure of individual relationships. Barlow and Cohen (Barlow & Cohen, 1997) identified that lack of trust and undefined roles and responsibilities also contribute to the failure of collaboration. Collaboration requires clear understanding and distribution of responsibilities, authorities and roles. It requires adequate information flows and communication of these authorities and roles among the collaborating organizations and reliable access to the latest technological and management knowledge.

MATERIALS AND METHODS

The study aimed at assessing the perceptions of construction professionals on the barriers and benefits of collaboration in the construction industry. The paper adopted a quantitative method for its data collection and utilized both primary and secondary sources of data. An intensive literature review was conducted which discovered the academic paradigms supporting the subject and which helped to identify the barriers and benefits of collaboration in the construction industry. After the literature review, a survey questionnaire was designed for the respondents. The respondents comprised of construction professionals (Engineers, Quantity Surveyors, Project Managers) working for various classes of construction firms and who have in one way or the other engaged in collaboration before. Such professionals were those situated in Kumasi and Accra. This is because these are the two cities in Ghana that house majority of the construction firms, and where collaborative activities are very rampant. Due to the difficulties encountered in assessing the population size, snowball and purposive sampling techniques were adopted to obtain the respondents for the study. Kumar (1996) describes the snowball sampling technique as a process of selecting a sample by networking. The snowball sampling is an approach for locating information on rich-key informants. De Vos *et al.* (2002) affirmed that snowball and purposive sampling are valuable in research since it is directed at individuals that are difficult to identify. Using this approach, a few potential respondents (construction firms) who had been involved in collaborative activities before were contacted and they were asked to further propose other construction firms they knew that had also engaged in such activities before. This technique was adopted to reach hard-to-get respondents. A total of twenty construction firms (10 in each city) were contacted. Three key personnel (Engineers, Quantity Surveyors, Project Managers) within each firm

were chosen for the survey. In all, a total of 60 questionnaires were sent out to the respondents.

The questionnaire was divided into three major sections. The first section sought information on the demography of the respondents, the second section of the questionnaire required the respondents to score on the Likert scale of 1 to 5 (where '1'= Highly unimportant and '5'= Highly Important) the potential benefits associated with collaboration in the construction industry. The third section further required the respondents to score on a Likert scale of 1 to 5 (where '1'= Highly insignificant and '5'= Highly significant) the barriers to collaboration in the construction industry.

Data was analyzed using the Relative Importance Indices (RII) for the ranking of the benefits and barriers identified. The five-point Likert scale was adopted and transformed to relative importance indices (RII) for each of the benefits and barriers as follows:

$$\mathrm{RII} = \frac{\sum W}{\mathrm{A}*\mathrm{N}} \qquad (1)$$

Where, W is the weighting given to each benefit or barrier by the respondents (ranging from 1 to 5), A is the highest weight (i.e. 5 in this case), and N is the total number of respondents. The higher the value of RII, the more important the benefit or barrier and vice versa (Megha & Rajiv, 2013). The RII was used to rank (R) the different benefits and barriers. These rankings made it possible to cross-compare the relative importance of the benefits and barriers as perceived by the three groups of respondents. Each individual strategy's RII perceived by all respondents should be used to assess the general and overall rankings to give an overall picture of the benefits and barriers of collaboration. RII was deemed necessary for the study because it considered the size of the population and the relative disadvantages experienced by the different management professionals.

RESULTS AND DISCUSSION

Sample characteristics

From the information provided in Table 1, it can be deduced that, respondents who dominated the study are engineers who belonged to private limited companies of D3K3 classification and have practiced for more than 5 years in the construction industry.

Benefits of collaboration in the Ghanaian construction industry

The opinions of the respondents were sought on the benefits associated with collaboration in the construction industry. Table 2 shows the ranking in descending order of these benefits using the method of relative importance index. Table 2 reveals the index rankings ranged between 67% - 84%.

Table 1. Demographic profile of the respondents (N=60)

Characteristic	Frequency	Percentage
Position in firm		
Engineers	24	40.0
Quantity Surveyors	21	35.0
Project Managers	15	25.0
Legal status of firm		
Private limited company	45	75.0
Joint venture	8	13.3
Sole proprietorship	4	6.7
Public limited company	3	5.0
Class of firm		
D1K1	3	5.0
D2K2	6	10.0
D3K3	36	60.0
D4K4	15	25.0
Years of experience		
More than 5 years	24	40.0
3-5 years	13	21.7
2-3 years	12	20.0
1-2 years	7	11.7
Less than 1 year	4	6.6

Table 2: Benefits of collaboration

Benefits	RII	Rank
Total cost perspective in collaboration	0.84	1
Technical expertise by partners	0.84	2
Availability of resources in collaborations	0.78	3
Equal empowerment in collaboration	0.78	4
Productive conflict resolution strategy	0.75	5
Mutual trust of partners	0.73	6
Flexibility to change by partners	0.73	7
Dedicated team by partners	0.73	8
Effective communication in collaboration	0.73	9
Commitment to quality by partners	0.72	10
Financial security in collaboration	0.70	11
Collective acceptance of collaboration	0.67	12

It can be inferred from Table 2 above that respondents' identification of the benefits of collaboration was grounded in to *total cost perspective in collaboration, technical expertise by partners and availability of resources in collaboration.* However, respondents ranked financial security in collaboration and collective acceptance of collaboration as low (11^{th} and 12^{th} respectively).

Total cost perspective in collaboration

Total cost perspective in collaboration is the most ranked benefit of collaboration, evident with an RII of 0.84. This confirms Cheung *et al.* (2003) assertion that firms in collaboration

are better equipped to ensure that projects are completed within cost since each firm presents some expertise. Therefore, the overall cost of the project is reduced.

Technical expertise by partners

Technical expertise by partners is ranked second with an RII of 0.84, which is also very high indicating that each firm in collaboration presents some aspect of technical expertise which complement each other to ensure a successful completion of the project.

Availability of resources in collaboration

Availability of resources in collaborations is third, ranked with an RII value of 0.78. Chan *et al.* (2004) highlighted that firms in collaboration benefit from the availability of resources since collaborative firms are willing to share resources and committed to a win-win attitude.

Barriers to collaboration in the construction industry

The opinions of the respondents were further sought on the barriers to collaboration in the Ghanaian construction industry. Table 3 shows the ranking in descending order of these barriers using the method of relative importance index. Table 3 reveals the index rankings ranged between 70% - 80%.

Table 3: Barriers to collaboration

Barriers	**RII**	**Rank**
Fear of micromanagement in collaboration	0.81	1
Lack of common goals	0.80	2
Past negative experience with collaboration	0.77	3
Complacency in collaboration	0.76	4
Lack of trust among partners	0.75	5
Fear of the unknown	0.75	6
Lack of consultation between partners	0.72	7
Lack of career paths by partners	0.71	8
Uneven commitment of firms	0.71	9
Poor management by partners	0.71	10
Past adversarial relationships in collaboration	0.70	11
Clash of corporate cultures of partners	0.68	12
Loss of interest by partners	0.68	13
Misunderstanding of collaboration concept	0.68	14
Cultural differences of firms	0.66	15
Lack of believe in collaboration	0.63	16
Lack of commitment	0.63	17
Undefined roles and responsibilities of partners	0.63	18
Lack of skills from partners	0.57	19
Contract size too small	0.51	20

From Table 3 above, the respondents identified that barriers were anchored on fear of micromanagement, lack of common goals and past negative experience with collaboration. However, respondents ranked lack of skills from partners and contract size too small as low (19^{th} and 20^{th} respectively).

Fear of micromanagement

Fear of micromanagement in collaboration is the highest ranked barrier to the practice of collaboration in construction, evident with an RII value of 0.81. Most construction firms hesitate to the using of collaboration for the reason of being afraid of micromanagement. Collaboration and alliances fall well of expectations due to micromanagement (Anglisger & Jenk, 2004) and as a result, firms do not want to employ collaboration to execute projects.

Lack of common goals

Lack of common goals is the second most significant barrier with an RII value of 0.80. Normally, common goals of partners propel these partners to do business together. Where there are no common goals, partners lose interest in partnering each other. This buttresses Barlow and Cohen's (1997) assertion that firms need to have common goals to implement collaboration effectively.

Past negative experience with collaboration

Past negative experience with collaboration is the third and ranked with an RII value of 0.76. Respondents indicated that experience with the use of collaboration in the construction industry has yielded negative results and this prevented them from using collaboration for the fear of the negative experiences repeating themselves. Sonnenbery (1992) confirms this revelation.

CONCLUSIONS

Collaboration is very vital to the growth of every organization and helps to achieve the successful completion of a construction project. However, research has shown that collaboration in the construction industry faces numerous barriers which adversely affect its incorporation. Notwithstanding these barriers, collaboration presents numerous benefits to the collaborating partners. Furthermore, collaboration provides a competitive advantage, ensures growth and increases productivity. Therefore, collaboration should be widely accepted and practiced across a wider spectrum of the construction industry to achieve the full benefits it offers. However, a careful consideration should be given to professional expertise with sufficient skills when selecting partners. Finally, workshops should be organized to advocate the use of collaboration in the construction industry.

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